Published online on 25 October 2011. Shi, Z., Ge, X. J., Kilian, N., Kirschner, J., Štěpánek, J., Sukhorukov, A. P., Mavrodiev, E. V. & Gottschlich, G. 2011. Cichorieae. Pp. 195–353 *in:* Wu, Z. Y., Raven, P. H. & Hong, D. Y., eds., *Flora of China Volume 20–21 (Asteraceae)*. Science Press (Beijing) & Missouri Botanical Garden Press (St. Louis).

5. Tribe CICHORIEAE

菊苣族 ju ju zu

Shi Zhu (石铸 Shih Chu), Ge Xuejun (葛学军);
Norbert Kilian, Jan Kirschner, Jan Štěpánek, Alexander P. Sukhorukov, Evgeny V. Mavrodiev, Günter Gottschlich

Annual to perennial, acaulescent, scapose, or caulescent herbs, more rarely subshrubs, exceptionally scandent vines, latex present. Leaves alternate, frequently rosulate. Capitulum solitary or capitula loosely to more densely aggregated, sometimes forming a secondary capitulum, ligulate, homogamous, with 3–5 to ca. 300 but mostly with a few dozen bisexual florets. Receptacle naked, or more rarely with scales or bristles. Involucre cylindric to campanulate, ± differentiated into a few imbricate outer series of phyllaries and a longer inner series, rarely uniseriate. Florets with 5-toothed ligule, pale yellow to deep orange-yellow, or of some shade of blue, including whitish or purple, rarely white; anthers basally calcarate and caudate, apical appendage elongate, smooth, filaments smooth; style slender, with long, slender branches, sweeping hairs on shaft and branches; pollen echinolophate or echinate. Achene cylindric, or fusiform to slenderly obconoidal, usually ribbed, sometimes compressed or flattened, apically truncate, attenuate, cuspidate, or beaked, often sculptured, mostly glabrous, sometimes papillose or hairy, rarely villous, sometimes heteromorphic; pappus of scabrid [to barbellate] or plumose bristles, rarely of scales or absent.

About 95 genera and ca. 2,500 species (and at least 8,000 apomictic and hybrid taxa): chiefly in the temperate to subtropical zones of the N Hemisphere, and extending to tropical and S Africa, tropical Asia, Australia and New Zealand, and South America, also on SE Pacific and mid-Atlantic archipelagos; 35 genera (two endemic, one introduced) and 388 species (190 endemic, 12 introduced) in China.

1a. Pappus absent in all or in outer achenes, or in all achenes present but of minute (≤ 0.3 mm) scales or very short (≤ 1.5 mm) bristles.
2a. Pappus a tiny crown of fimbriate 0.1–0.3 mm scales; florets blue ..... 83. *Cichorium*
2b. Pappus absent in all or in outer achenes, or of very short (≤ 1.5 mm) bristles; florets yellow.
3a. Achene dimorphic, outer achenes apically attenuate or shortly beaked, inner ones with a long slender beak strongly exceeding involucre; pappus in all or in inner achenes present.
4a. Outer achenes columnar, curved, with appressed hairs, apically attenuate; pappus of smooth to scabrid 0.2–1.5 mm bristles, shorter in outer, longer in inner achenes; inner phyllaries hardened in fruit ..... 70. *Garhadiolus*
4b. Outer achenes broadly obconical, compressed, lateral ribs strongly winglike and enlarged, shortly beaked; pappus absent in outer achenes, mostly present and of 3–5 mm bristles in inner ones; inner phyllaries not hardened in fruit ..... 69. *Heteracia*
3b. Achene homomorphic, never beaked; pappus in all achenes absent.
5a. Achene body columnar-scorpioid, ca. 1 cm, abaxially with antrorse and apically with retrorse rigid hooked needlelike spines; leaves undivided, narrowly grasslike ..... 53. *Koelpinia*
5b. Achene body narrowly ellipsoid, subcompressed, to ca. 5 mm, with 0 or (1 or)2–4 main ribs apically prolonged into 0.2–2.2 mm slender hooked appendages; leaves pinnatipartite or pinnatisect ..... 67. *Lapsanastrum*
1b. Pappus well developed in all achenes, of soft or stiff bristles, usually more than 1/2 as long as achene.
6a. Pappus bristles all or at least inner ones plumose but often apically scabrid.
7a. Plumose bristles stiffly fimbriately plumose, fimbriae not intertwining; florets yellow or white; leaves never grasslike.
8a. Receptacle with linear scarious scales ± as long as involucre and enclosing base of florets; stem, leaves, and involucre with rigid simple hairs ..... 81. *Hypochaeris*
8b. Receptacle naked; stem, leaves, and involucre with simple and 2-hooked hairs ..... 82. *Picris*
7b. Plumose bristles softly or lanately fimbriately plumose, fimbriae conspicuously intertwining; florets of some shade of yellow, white, blue, or purple; leaves often grasslike.
9a. Phyllaries in 1(or 2) series, outer series if present never leaflike ..... 55. *Tragopogon*
9b. Phyllaries in several series, or in 2 series but then outer series leaflike and longer than inner series.
10a. Phyllaries in 2 series, outer phyllaries herbaceous, leaflike, usually longer than inner phyllaries, inner usually 5 ..... 54. *Epilasia*
10b. Phyllaries in several series, outer phyllaries never leaflike and longer than inner ones.
11a. Leaves undivided, parallel-veined, grasslike or more rarely also lanceolate to ovate ..... 51. *Scorzonera*
11b. Leaves pinnately divided ..... 52. *Podospermum*
6b. Pappus bristles never plumose, all smooth to scabrid.
12a. Pappus white, of numerous fine cottony outer bristles intermixed with some thicker inner ones ..... 63. *Sonchus*
12b. Pappus white or grayish, yellowish, straw-colored, brownish, or reddish brown, of bristles ± equal in diam. and stiffness.
13a. Leaves, axes, or involucres with various types of hairs, but including stellate hairs and/or multiseriate hairs with projecting cell apices.
14a. Achene 2.5–5 mm, with 8–10 equal ribs apically confluent in an obscure ring ..... 84. *Hieracium*

14b. Achene 1–2 mm, with apically distinct ribs not confluent in an obscure ring ..... 85. *Pilosella*
13b. Leaves, axes, or involucres glabrous or hairy, but never with stellate hairs or multiseriate hairs with projecting cell apices.
15a. Capitulum solitary on a hollow scape (without nodes, leaves, or bracts) single or few from a leaf rosette; achene beak usually longer than achene body, body at least apically mostly spinulose, scaly, and/or tuberculate and usually with an apical cone ..... 71. *Taraxacum*
15b. Capitula usually few to numerous, either fascicled or aggregated amid a leaf rosette, or on a branched stem; if capitulum rarely solitary then not on a hollow scape and achene not as above.
16a. Rosulate herbs with several to many capitula either on short, wiry unbranched axes (peduncles) directly from and fasciculate amid leaf rosette, or sessile to very shortly pedunculate and densely aggregated on an apically ± inflated, flat, convex, or more rarely cylindrically elongate rosette shoot.
17a. Capitula with 3–6 florets, sessile or on peduncle shorter than involucre; phyllaries in 1 series, hardened in fruit, outer phyllaries absent, inner ones connate in basal part.
18a. Florets yellow or pale to medium purplish; achene obconical, compressed, with 5 ribs, apex truncate; pappus bristles caducous ..... 77. *Syncalathium*
18b. Florets purplish red to blue; achene obovoid, compressed, with winglike lateral ribs and 1 slender rib on either side, apex constricted into a ca. 0.5 mm fragile thin beak; pappus caducous with pappus disk (*M. souliei*) ..... 58. *Melanoseris*
17b. Capitula with 4–30 florets, peduncle shorter or longer than involucre; phyllaries in more than 1 series, herbaceous in fruit, outer phyllaries 2 or more, inner ones basally connate or free.
19a. Florets blue to bluish purple (*D. amoena* and *D. gombalana*) ..... 76. *Dubyaea*
19b. Florets yellow or rarely white.
20a. Capitula with 4 or 5 florets, with a peduncle shorter than to ± as along as involucre and from an apically ± inflated, flat, convex, or more rarely cylindrically elongate rosette shoot (*Soroseris* spp. 3–7) ..... 80. *Soroseris*
20b. Capitula with 12–30 florets, with a peduncle usually longer than involucre, from a non-inflated rosette shoot.
21a. Synflorescence hemispheric, of many densely crowded capitula surrounded by a rosette of orbicular to ovate leaves abruptly contracted into an unwinged petiole-like basal portion; florets yellow or white (*Soroseris* spp. 1 and 2) ..... 80. *Soroseris*
21b. Synflorescence loosely corymbiform with few to several capitula amid a rosette of ± spatulate leaves very gradually attenuate toward base; florets yellow ..... 66. *Youngia*
16b. Capitula few to numerous on a branched stem a few cm to more than 2 m tall; rarely capitulum solitary on an unbranched stem.
22a. Achene isodiametric and with ribs of ± equal shape and size; pappus white, rarely pale yellowish.
23a. Achene with 10 very prominent ± winglike ribs ..... 74. *Ixeris*
23b. Achene with 10–20 ± prominent but never winglike ribs.
24a. Plants delicate; involucre narrowly cylindric, longest outer phyllary ≤ 1/4(–1/3) of inner ones, inner phyllaries abaxially glabrous; capitula with 5–15 florets; achene pale brown, with 10 ribs ..... 72. *Askellia*
24b. Plants usually robust; involucre cylindric to campanulate, longest outer phyllary 1/4–2/3 or more of inner ones, inner phyllaries abaxially usually with simple and/or glandular hairs along midvein; capitula with (8–)20–70 (and more) florets; achene of some shade of brown, with 10–20 ribs ..... 65. *Crepis*
22b. Achene (sometimes except inner ones) somewhat to distinctly compressed and/or with ± unequal ribs; pappus white, yellowish, or brownish.
25a. Pappus yellowish, straw-colored, brownish, or grayish and achene never strongly compressed with dominant lateral ribs and/or with capillaceous beak.
26a. Florets reddish to bluish purple, or blue.
27a. Involucre broadly campanulate; capitula with many (usually 50–70) florets; stem in upper half and peduncles often with long stiff blackish hairs ..... 76. *Dubyaea*
27b. Involucre narrowly cylindric to narrowly campanulate; capitula with 5–30 florets; stem in upper half and peduncles glabrous ..... 56. *Faberia*
26b. Florets yellow, or rarely whitish to pale purplish or pale greenish.
28a. Involucre 4.5–8 mm; capitula erect.
29a. Achene with short slender beak; pappus yellowish to yellowish brown ..... 73. *Ixeridium*
29b. Achene apically attenuate but not beaked; pappus ash-gray or yellowish brown ..... 66. *Youngia*
28b. Involucre 10–20 mm; capitula often nodding at anthesis.
30a. Synflorescence secundly racemiform (*Y. racemifera*) ..... 66. *Youngia*
30b. Synflorescence corymbiform or paniculiform, or capitula 1 or 2.

31a. Stem, branches, and phyllaries with conspicuous stiff yellowish brown, reddish, purplish brown, or blackish mostly glandular hairs, or glabrous and stem with 1 or 2 nodding capitula only ..... 76. *Dubyaea*

31b. Stem, branches, and phyllaries glabrous and stem with some to many capitula, or ± hairy but never with conspicuous stiff mostly glandular hairs.

32a. Leaves grasslike ..... 78. *Hololeion*

32b. Leaves pinnately lobed or, if undivided, ovate to triangular-ovate ..... 79. *Nabalus*

25b. Pappus white, exceptionally faintly yellowish or brownish but then achene strongly compressed with dominant lateral ribs and/or with capillaceous beak.

33a. Plants broomlike and/or achene with body apically scaly and/or tuberculate and beaked (sometimes very shortly) ..... 64. *Chondrilla*

33b. Plants never broomlike, achene beaked or not but body never scaly or tuberculate.

34a. One of following features applies: 1) achene ± compressed with ± dominating or broadened lateral ribs; 2) pappus double and additionally with an outer series of minute hairs (usually ≤ 0.3 mm); 3) florets purplish, bluish, or exceptionally white.

35a. Achene black or reddish-purplish (if rarely pale then plant scandent), fusiform to cylindric, without dominating lateral ribs, and apex truncate, attenuate, or shortly (ca. 1 mm) beaked; florets some shade of purple or blue; pappus simple; involucre narrowly cylindric.

36a. Achene black, fusiform, weakly compressed, apex attenuate to shortly beaked and often pale ..... 59. *Paraprenanthes*

36b. Achene reddish-purplish (rarely pale and plant scandent), fusiform to cylindric, compressed, apex truncate ..... 60. *Notoseris*

35b. Achene pale to dark brown, more rarely blackish or reddish brown, gray, or olive green, subcylindric, ± ellipsoid to obovoid, or ± fusiform, usually with, rarely without, dominating or broadened (sometimes winglike) lateral ribs and apex truncate to long filiform beaked; pappus simple or double; florets yellow, bluish, or purplish, rarely white; involucre narrowly cylindric, cylindric, campanulate, or broadly campanulate.

37a. Achene always strongly compressed, ellipsoid to obovoid, dominating lateral ribs sometimes even winglike, apex with a short stout or with a long filiform beak; pappus always simple; involucre narrowly cylindric at anthesis, inner phyllaries 5 or 8, or if 3 or 4 then plant a subshrub with whitish, rigid, intricately and divaricately branched stems; stems and branches usually glabrous, at least in upper half; capitula always erect; florets some shade of yellow, or blue, bluish purple, purple, or white ..... 61. *Lactuca*

37b. Achene ± compressed, dominating lateral ribs never winglike, apex truncate, attenuate, or with a short stout or slender but never long filiform beak; pappus usually double, more rarely outer series with minute hairs indistinct or missing; involucre narrowly cylindric to broadly campanulate, inner phyllaries 3 to many; capitula erect or nodding; stems and branches glabrous, or hispid, hirsute, or otherwise hairy; florets mostly some shade of blue or purple, exceptionally white, very rarely yellow.

38a. Involucre with 5–10 inner phyllaries, 6–10(–12) mm and narrowly cylindric, or cylindric, 11–13 mm, and with longest outer phyllary 1/2–3/4 of inner ones, or to 15 mm, broadly cylindric to campanulate, and herb tall with many-capitellate narrowly racemiform synflorescence to 50 cm; florets always bluish or purplish; achene 4–5 mm ..... 57. *Cicerbita*

38b. Involucre broadly cylindric to broadly campanulate, mostly exceeding 15 mm and never with many-capitellate narrowly racemiform synflorescence to 50 cm, or rarely narrowly cylindric but then with either only 3 or 4 inner phyllaries, or > 13 mm, or strongly hirsute, or florets yellow, or achene ≥ 6 mm, or, if rather cylindric, longest outer phyllary to ca. 1/2 of inner ones ..... 58. *Melanoseris*

34b. Achene ± isodiametric or ± compressed but not with ± dominating or broadened lateral ribs; pappus always single; florets always of some shade of yellow.

39a. Achene apex ± truncate (at least before shedding of pappus disk if pappus disk caducous).

40a. Longest outer phyllary ≤ 1/3 of inner ones; stem stiff erect; synflorescence narrowly racemiform or paniculiform; pappus caducous (without pappus disk) ..... 75. *Sonchella*

40b. Longest outer phyllary 1/2–3/4 of inner ones; stem weak and procumbent to ascending, or long creeping, or if stiff erect then hardened and densely divaricately and intricately branched; synflorescence corymbose to divaricately paniculiform, or capitulum solitary; pappus persistent or caducous together with pappus disk ..... 62. *Launaea*

39b. Achene apex distinctly attenuate to beaked.
41a. Stem leaves well developed and at least upper ones conspicuously clasping stem, or plant stoloniferous (*Crepidiastrum* spp. 1–6) ..... 68. *Crepidiastrum*
41b. Stem leaves absent or present but not clasping stem and plant not stoloniferous.
42a. Stems herbaceous to hardened, several to numerous, more rarely only 1, erect, with some to many heads, from a stout woody caudex and plant often caespitose; basal leaves and stem leaves (if present) pinnate to bipinnate with linear, lanceolate, or filiform lobes; involucre 8–12 mm, most phyllaries subapically crested or corniculate (*Crepidiastrum* spp. 7–9) ..... 68. *Crepidiastrum*
42b. Stems usually 1 or 2, of various kind, either from an inconspicuous caudex and plant never caespitose, or plants annual; involucre ≤ 7 mm and phyllaries subapically all strictly plane, or involucre to 13 mm and either some phyllaries crested or corniculate but then leaves never pinnate with linear, lanceolate, or filiform lobes, or all strictly plane.
43a. Involucre narrowly cylindric, 7–8 mm, all phyllaries subapically plane; perennial rosulate herbs, stem solitary; either stem, branches, and phyllaries white echinulate, or rosette leaves with a pentagonal or triangular lamina and a petiole as long as or longer than lamina (*Ixeridium* spp. 7 and 8) ..... 73. *Ixeridium*
43b. Involucre 4–13 mm, phyllaries all subapically plane or some crested or corniculate; annual herbs, or if perennial herbs and rosulate then stem, branches, and phyllaries never white echinulate and leaves never as above ..... 66. *Youngia*

51. SCORZONERA Linnaeus, Sp. Pl. 2: 790. 1753.

鸦葱属 ya cong shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Lasiospora Cassini; *Takhtajaniantha* E. A. Nazarova.

Herbs, perennial [or annual], rarely subshrubs, often with woody caudex and rosulate. Leaves usually linear to linear-elliptic or lanceolate, more rarely also ovate, with parallel veins, not divided, base with semiamplexicaul usually persistent sheath, margin entire, flat, or sometimes undulate. Involucre cylindric to campanulate, usually very conspicuously prolonged toward fruiting. Phyllaries in few to several series, imbricate, often (especially inner phyllaries) with scarious margin; longest outer phyllaries usually to more than 1/2 as long as and often ± approaching inner phyllaries in length; inner phyllaries lanceolate to linear-lanceolate. Receptacle naked. Florets yellow (and often pinkish on drying) or rarely orange or pale purple, 1.1–2 × as long as involucre. Achene ± cylindric to columnar, with numerous smooth or tuberculate longitudinal ribs, glabrous, puberulent, or villous along entire length or apically only, apex truncate or more rarely attenuate. Pappus of strong bristles, persistent or caducous, a few often distinctly longer than remainder; bristles softly fimbriately plumose for most of length and apically scabrid.

About 180 species: N Africa, Asia, Europe; 24 species (four endemic) in China.

Even after exclusion of *Podospermum* and *Epilasia*, *Scorzonera* is still polyphyletic (Mavrodiev et al., Taxon 53: 699–712. 2004). Because a more detailed phylogenetic study and revision of *Scorzonera* s.l. is not yet available, and the circumscription of its diverse elements therefore not clear, the genus is treated here in this wider sense still including *Takhtajaniantha* and *Lasiospora*.

1a. Perennial herbs or subshrubs, often hemispheric; stems usually basally woody, virgate, repeatedly divaricately branched; basal leaves early deciduous; stem leaves linear to filiform and small, or larger and spreading.
2a. Caudex with scarious leaf sheath residues; stem leaves inconspicuous, to 10 mm; capitula with 4 or 5 florets ..... 1. *S. divaricata*
2b. Caudex with fibrous and lacerate leaf sheath residues; stem leaves conspicuous, horizontally spreading to spreading-erect, 1–9 cm; capitula with 7–12 florets ..... 2. *S. pseudodivaricata*
1b. Perennial herbs, never hemispheric; stems herbaceous, unbranched or rather weakly branched; basal leaves usually present; stem leaves present or absent, of various shapes.
3a. Caudex with conspicuous dark brown fibrous and lacerate leaf sheath residues.
4a. Leaves filiform to filiform-linear, 1–1.5 mm wide, almost somewhat curled, glaucous ..... 10. *S. curvata*
4b. Leaves not filiform to filiform-linear, 2 mm or more wide, ± straight, green.
5a. Ovary and achene shortly villous along their entire length.
6a. Leaves 2–15 mm wide, margin undulate; plants glabrous; achene ca. 10 mm ..... 11. *S. ikonnikovii*
6b. Leaves 3–4 mm wide, margin flat; leaves, stems, and phyllaries floccose or lanate when young, soon glabrescent; achene 7–8 mm ..... 12. *S. manshurica*
5b. Ovary and achene glabrous.

7a. Stem (especially apically) and involucre basally floccose arachnoid hairy; leaves 2–4 mm wide ..... 9. *S. subacaulis*
7b. Plants usually glabrous (occasionally leaf sheath margin or apical phyllary margin arachnoid hairy); leaves sometimes as narrow as 2 mm wide, otherwise 0.5–3(–4.5) cm wide.
8a. Basal leaves often rather narrow (linear, linear-lanceolate, or linear-elliptic), margin usually flat ..... 7. *S. austriaca*
8b. Basal leaves often rather broad (broadly ovate, ovate-lanceolate, oblanceolate, elliptic-lanceolate, linear-elliptic, or linear), margin undulate ..... 8. *S. sinensis*

3b. Caudex with smooth, usually scarious, rarely with age lacerate or somewhat fibrous but never dark brown fibrous leaf sheath residues, or without leaf sheath residues.
9a. Ovary and achene densely villous along their entire length.
10a. Leaves usually 0.8–1.5 cm wide, leaf blade margin densely undulate; plants with globose tuber some cm below surface ..... 24. *S. circumflexa*
10b. Leaves usually 2–8 mm wide, leaf blade margin flat; plants with or without globose tuber.
11a. Plants without tuber, to 40 cm tall; pappus 2–2.5 cm ..... 22. *S. ensifolia*
11b. Plants with tuber some cm below surface, to 20 cm tall; pappus less than 1.5 cm ..... 23. *S. sericeolanata*
9b. Ovary and achene glabrous or at most ± villous at pappus disk.
12a. Stems leafless, sparsely leaved, or with reduced leaves, with 1 or few single-capitellate branches, or plants subacaulescent.
13a. Caudex conspicuously dirty white lanate of adaxially thickly lanate leaf sheath residues; leaves broadly lanceolate to ovate, at least in part usually more than 2 cm wide ..... 3. *S. capito*
13b. Caudex not lanate, leaf sheaths adaxially glabrous; leaves at most ca. 1.5 cm wide.
14a. Involucre, base of involucre, and sometimes leaves somewhat arachnoid hairy; florets ca. 2 × as long as involucre ..... 6. *S. radiata*
14b. Plants entirely glabrous; florets less than 1.5 × as long as involucre.
15a. Leaves lanceolate, or narrowly elliptic to linear, 2–15 mm wide ..... 4. *S. parviflora*
15b. Leaves linear, 1–2 mm wide ..... 5. *S. luntaiensis*
12b. Stems leafy, well developed, and usually branched at least basally.
16a. Plants of saline soil, glabrous (but leaf sheaths adaxially often lanate) and grayish to glaucous green; leaves ± fleshy, narrowly elliptic to lanceolate; stem leaves often partly opposite ..... 21. *S. mongolica*
16b. Plants not of saline soil, glabrous and fresh green or with indumentum; leaves not fleshy, variously shaped; stem leaves always alternate.
17a. Plants with tuber some cm below surface, to 20(–40) cm tall; leaves 1–3 mm wide.
18a. Plants 30–40 cm tall; involucre 2–2.4 cm at anthesis ..... 20. *S. aniana*
18b. Plants to 20 cm tall; involucre 1.3–1.8 cm at anthesis.
19a. Caudex with adaxially lanate leaf sheath residues; involucre ca. 1.8 cm at anthesis; pappus bristles plumose for most of length ..... 18. *S. pusilla*
19b. Caudex with glabrous leaf sheath residues; involucre 1.3–1.5 cm at anthesis; pappus bristles scabrid for most of length ..... 19. *S. pamirica*
17b. Plants without tuber, taller than above; leaves usually wider than above.
20a. Involucre from at least 2 cm at anthesis, to 4 cm in fruit; achene 1.7–2.3 cm, apically conspicuously long attenuate; pappus caducous as an entity ..... 13. *S. albicaulis*
20b. Involucre to 2 cm at anthesis, not more than ca. 3 cm in fruit; achene not more than 1.5 cm, apically not conspicuously attenuate; pappus persistent.
21a. Florets slightly longer than involucre; plants entirely glabrous; achene 7–9 mm ..... 4. *S. parviflora*
21b. Florets distinctly longer than involucre (usually ca. 1.5 × as long as involucre); stem, leaves, or involucre with short branched, dendritic or stellate hairs; achene 1–1.5 cm.
22a. Plants with weak, ascending-erect stems to at most 30 cm tall, usually branched already near base; achene with tuberculate ribs.
23a. Plants with conspicuous gray indumentum; leaves linear, 1–5 mm wide, with flat margin ..... 16. *S. pubescens*
23b. Plants stellate puberulent, glabrescent; leaves narrowly lanceolate or narrowly elliptic, 4–7 mm wide, with mostly undulate margin ..... 17. *S. inconspicua*
22b. Plants with strong erect stems to 75 cm tall, usually branched apically; achene with smooth ribs.

24a. Florets yellow ..... 14. *S. iliensis*
24b. Florets deep orange ..... 15. *S. transiliensis*

1. Scorzonera divaricata Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 5: 200. 1832.

拐轴鸦葱 guai zhou ya cong

Subshrubs or perennial herbs, 20–40 cm tall. Rootstock 4–10 mm in diam. Caudex branched, with smooth scarious leaf sheath residues. Stems some to many, grayish green, slender, erect, repeatedly divaricately and intricately branched from base, pubescent or glabrous, basally woody; branches slender, ascending-erect. Basal leaves few, distant, linear, early deciduous. Stem leaves linear to filiform, 2–10 × 1–3 mm, apex usually hooked; upper stem leaves bractlike, inconspicuous. Capitula many, terminal, with 4 or 5 (to 12–15 in var. *sublilacina*) florets. Involucre narrowly cylindric, ca. 1 cm at anthesis, 1.5–1.7 × 0.3–0.4 cm in fruit. Phyllaries puberulent, pubescent, or sparsely pubescent in fruit; outer phyllaries few, ovate to lanceolate, longest ca. 1/2 as long as inner phyllaries; inner phyllaries usually ca. 4. Florets yellow (or pale purple in var. *sublilacina*). Achene pale yellow to yellowish brown, cylindric, 7–9 mm, with smooth ribs, glabrous or apically villous. Pappus straw-colored to brownish, ca. 1.5 cm. Fl. and fr. May–Sep.

Dry riverbeds, lowland sand dunes, gullies, valleys, hills, slopes, plains at base of mountains; 500–2000 m. Gansu, Hebei, Nei Mongol, Ningxia, Shaanxi, Shanxi [Mongolia].

1a. Florets yellow; achene glabrous ..... 1a. var. *divaricata*
1b. Florets pale purple; achene apically villous ..... 1b. var. *sublilacina*

1a. Scorzonera divaricata var. **divaricata**

拐轴鸦葱(原变种) guai zhou ya cong (yuan bian zhong)

Scorzonera divaricata var. *intricatissima* Maximowicz.

Florets yellow. Achene glabrous.

Dry riverbeds, lowland sand dunes, gullies, valleys; 500–2000 m. Gansu, Hebei, Nei Mongol, Ningxia, Shaanxi, Shanxi [Mongolia].

1b. Scorzonera divaricata var. **sublilacina** Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 32: 494. 1888.

紫花拐轴鸦葱 zi hua guai zhou ya cong

Florets pale purple. Achene apically villous.

● Hills, slopes, plains at base of mountains; ca. 1500 m. Gansu, Nei Mongol (Hohhot).

Scorzonera divaricata var. *sublilacina*, originally described by Maximowicz from material from Nei Mongol and Gansu with capitula of up to 15 pale purple florets, was referred by Lipschitz (Fragm. Monogr. Scorzonera 2: 124. 1939) to this species rather than to *S. pseudodivaricata* as were the other varieties with more numerous florets than is usual in *S. divaricata*. A reassessment of this taxon and its affinity appears worthwhile considering the frequent confusion between plants of *S. divaricata* and *S. pseudodivaricata*. Because the yellow ligules of both *S. divaricata* and *S. pseudodivaricata* can become pinkish on drying, floret color needs to be established on living plants.

Scorzonera divaricata var. *sublilacina* is used medicinally for treating serious cases of boils.

2. Scorzonera pseudodivaricata Lipschitz, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 42: 158. 1933.

帚状鸦葱 zhou zhuang ya cong

Scorzonera divaricata Turczaninow var. *foliata* Maximowicz; *S. divaricata* var. *virgata* Maximowicz; *S. muriculata* C. C. Chang; *S. pseudodivaricata* var. *leiocarpa* C. H. An; *S. rugulosa* C. C. Chang.

Subshrubs or perennial herbs, 7–50 cm tall. Rootstock ca. 9 mm in diam. Caudex unbranched or more rarely branched, with somewhat fibrous and lacerate leaf sheath residues. Stems some to many, grayish green, rigid, herbaceous, sparsely to moderately divaricately branched in apical half, puberulent, glabrescent, or glabrous, leafy; branches virgate, slender, spreading-erect. Basal leaves crowded, linear, early deciduous. Stem leaves linear to filiform, usually 1–9 cm × 0.5–5 mm, horizontally spreading to spreading-erect, straight or somewhat hooked, often falcate, pubescent, glabrescent, or glabrous; upper stem leaves progressively smaller but mostly still leaflike. Capitula many, terminal, with usually 7–12 florets. Involucre cylindric, usually 1.5–1.8 cm at anthesis, 1.8–2.5 × 0.5–0.8 cm in fruit. Phyllaries puberulent; outer phyllaries triangular-ovate to linear-lanceolate, longest 1/2–2/3 as long as inner phyllaries; inner phyllaries usually 5 or 6. Florets yellow. Achene brownish, dark green, or blackish, cylindric, 7–8 mm, with elevated smooth or tuberculate ribs, glabrous. Pappus dirty white to straw-colored, 1.3–1.8 cm. Fl. and fr. May–Oct.

Gravelly deserts, dry slopes, along streams, sandy soils; 600–3100 m. Gansu, Nei Mongol, Ningxia, Qinghai, Shaanxi, ?Sichuan, Xinjiang [Mongolia].

Scorzonera pseudodivaricata has often been confused with *S. divaricata*, hence the name, but both species are actually well distinct.

A report by Ostenfeld (in Hedin, S. Tibet 6(3): 29. 1922) of *Scorzonera divaricata* var. *virgata* Maximowicz (being a synonym of *S. pseudodivaricata*) was erroneously treated by Tzvelev (Rast. Tsentral. Azii 14b: 122. 2008) as "*S. divaricata* Turczaninow var. *virgata* (Candolle) Maximowicz" and, consequently, taken as a substantiation for the presence of the W Himalayan *S. virgata* Candolle in Xinjiang and C Asia, which is, however, clearly erroneous.

3. Scorzonera capito Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 32: 491. 1888.

棉毛鸦葱 mian mao ya cong

Herbs 5–15 cm tall, perennial, rosulate. Rootstock dark brown, ca. 2 cm in diam. Caudex woody, globose to subglobose, simple or branched, densely covered with scarious entire adaxially abundantly dirty white lanate leaf sheath residues. Stems single or to 5(–7), ascending-erect, unbranched, arachnoid villous, glabrescent. Rosette leaves ovate to spatulate or elliptic, (3–)5–17 × (1–)2–3[–5] cm, somewhat arachnoid hairy, base attenuate, apex rounded, obtuse, or acute. Stem leaves 1–3, sessile, ovate to lanceolate, 0.5–2 × 0.3–1.5 cm, ± leathery, somewhat arachnoid hairy, glabrescent, or glabrous, base cordate and semiamplexicaul. Capitulum solitary. Involucre

broadly campanulate to subglobose, usually 1.6–2 × 1.2–1.5 cm at anthesis, to 2.5 × > 2 cm in fruit. Phyllaries abaxially arachnoid hairy; outermost phyllaries broadly ovate to broadly lanceolate. Florets yellow. Achene pale yellow, cylindric, 7–9 mm, with tuberculate ribs, apically sparsely villous. Pappus white, 1–1.5 cm. Fl. and fr. May–Aug.

Gravelly deserts, sandy soils, alluvial plains; 1100–1500 m. Nei Mongol, ?Ningxia [Mongolia].

4. Scorzonera parviflora Jacquin, Fl. Austriac. 4: 3. 1776.

光鸦葱 guang ya cong

Scorzonera caricifolia Pallas; *S. halophila* Fischer & C. A. Meyer ex Candolle.

Herbs 10–60 cm tall, perennial, rosulate, entirely glabrous. Rootstock creeping, ca. 1.5 cm in diam., usually branched. Caudex with or without scarious leaf sheath residues. Stems solitary or few, ascending to erect, unbranched or rarely sparsely branched. Rosette leaves lanceolate or narrowly elliptic to linear, 7–20 × 0.2–1.5 cm, often somewhat fleshy, base attenuate, apex acute to acuminate. Stem leaves few, smaller than rosette leaves, narrowly lanceolate. Capitulum solitary, rarely 2 or 3 per stem and distant. Involucre cylindric, usually 1.5–1.8 × 0.5–0.8 cm at anthesis, to 2.5–3 × 1–1.3(–1.5) cm in fruit. Phyllaries abaxially glabrous, apex acute to subobtuse; outermost phyllaries ovate to triangular-ovate. Florets yellow, slightly longer than involucre. Achene yellowish, cylindric, 7–9 mm, with smooth elevated ribs, glabrous. Pappus dirty white, 1.5–1.8 cm. Fl. and fr. Jun–Sep. 2*n* = 14.

Wet subsaline meadows, riverbanks, at springs; 900–1700 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Russia (C, E, and S European parts), Turkmenistan, Uzbekistan; SW Asia, C and S Europe].

5. Scorzonera luntaiensis C. Shih, Acta Phytotax. Sin. 33: 197. 1995.

轮台鸦葱 lun tai ya cong

Herbs 12–14 cm tall, perennial, rosulate. Rootstock brown, ca. 5 mm in diam. Caudex with pale brown scarious leaf sheath residues. Stem solitary, ca. 1.5 mm in diam., erect, unbranched, subglabrous or glabrous. Rosette leaves linear, 6–10 × 0.1–0.2 cm, glabrous, base attenuate, margin flat, apex acuminate. Stem leaves very few, mostly on basal portion of stem, similar to rosette leaves but smaller, subulate to linear. Capitulum solitary. Involucre narrowly cylindric, ca. 1.4 × 0.5 cm at anthesis. Phyllaries abaxially glabrous; outermost phyllaries ovate, ca. 4 × 2.2 mm, apex acute. Achene when immature without tubercles, glabrous, not seen when mature. Pappus white, ca. 8 mm. Fl. Jul.

● Damp riverbanks; ca. 1500 m. Xinjiang (N Tarim Pendi).

6. Scorzonera radiata Fischer ex Ledebour, Fl. Altaic. 4: 160. 1833.

毛梗鸦葱 mao geng ya cong

Scorzonera radiata var. *rebunensis* (Tatewaki & Kitamura) Nakai; *S. radiata* var. *subacaulis* Lipschitz & Krascheninnikov; *S. rebunensis* Tatewaki & Kitamura.

Herbs (3–)15–30(–50) cm tall, perennial, rosulate. Rootstock ca. 1.5 cm in diam. Caudex with scarious leaf sheath residues. Stems solitary to few, erect, unbranched, arachnoid hairy especially under capitula, glabrescent with age. Rosette leaves linear, linear-lanceolate, or linear-elliptic, 5–30 × 0.3–1.5[–1.8] cm, sometimes sparsely arachnoid hairy, glabrescent, base attenuate, apex acuminate. Stem leaves 0–3, linear to linear-lanceolate, smaller than rosette leaves. Capitulum solitary. Involucre broadly cylindric to campanulate, 1.7–2.1 × 0.8–1 cm at anthesis, to 2.6 × 1.8 cm in fruit. Phyllaries abaxially sparsely arachnoid hairy, glabrescent, apex usually with a red spot; outermost phyllaries ovate to broadly lanceolate. Florets yellow, almost 2 × as long as involucre. Achene cylindric, 0.9–1.3 cm, with smooth elevated ribs, glabrous. Pappus dirty yellow, 1.1–1.4 cm. Fl. and fr. May–Jul. 2*n* = 14.

Forest margins, forests, grasslands, gravelly riverbanks; 900–2600 m. Heilongjiang, Jilin, Liaoning, Nei Mongol, Xinjiang [Kazakhstan, Russia (Asian part), Uzbekistan].

7. Scorzonera austriaca Willdenow, Sp. Pl. 3: 1498. 1803.

鸦葱 ya cong

Scorzonera austriaca var. *plantaginifolia* Kitagawa; *S. sinensis* (Lipschitz & Krascheninnikov) Nakai f. *plantaginifolia* (Kitagawa) Nakai.

Herbs 5–45 cm tall, perennial, rosulate. Rootstock dark brown. Caudex woody, densely covered with brown fibrous and lacerate leaf sheath residues. Stems solitary or few, erect, unbranched, glabrous. Rosette leaves narrowly linear, linear-lanceolate, linear-elliptic, or narrowly elliptic, usually 3–35 × 0.2–2.5 cm, glabrous or occasionally base and sheath marginally arachnoid hairy, base long attenuate, margin flat, apex acute to acuminate. Stem leaves 2 to several, scalelike, lanceolate to subulate-lanceolate, base semiamplexicaul. Capitulum solitary. Involucre cylindric, usually 2.1–2.8 × 0.6–1.2 cm at anthesis, to 3.3 × 1.5 cm in fruit. Phyllaries abaxially glabrous or occasionally inner ones apically arachnoid hairy at margin, apex acute, obtuse, or rounded; outermost phyllaries triangular to triangular-ovate. Florets yellow, usually to 1.5–1.7 × as long as involucre. Achene whitish to pale brown, cylindric, 1.2–1.5 cm, with smooth or sometimes tuberculate ribs, glabrous. Pappus dirty white, usually 1.5–1.7 cm. Fl. and fr. Apr–Jul. 2*n* = 14*.

Slopes, floodplains, grassy riverbanks and lake shores; 400–2000 m. Gansu, Hebei, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Xinjiang [Kazakhstan, Mongolia, Russia; C and SE Europe].

Scorzonera austriaca is the widespread and name-giving taxon of the highly polymorphic *S. austriaca* complex, to which the following five species belong, and which is in need of a modern revision covering its entire distribution area. The following two species appear to lack clear morphological discontinuities and seem thus doubtfully distinct at species rank.

8. Scorzonera sinensis (Lipschitz & Krascheninnikov) Nakai, Rep. Inst. Sci. Res. Manchoukuo 1: 171. 1937.

桃叶鸦葱 tao ye ya cong

Scorzonera austriaca Willdenow subsp. *sinensis* Lipschitz & Krascheninnikov, Fragm. Monogr. Scorzonera 1: 120. 1935.

Herbs usually 5–50 cm tall, perennial, rosulate. Rootstock brown to dark brown, ca. 1.5 cm in diam. Caudex woody, often branched, densely covered with fibrous and lacerate leaf sheath residues. Stems solitary or few, erect, unbranched, glabrous. Rosette leaves broadly ovate, ovate-lanceolate, oblanceolate, elliptic-lanceolate, linear-elliptic, or broadly linear, usually 5–20(–30) × (0.5–)1–3(–4.5) cm, glabrous, base long attenuate, margin undulate, apex acute to acuminate. Stem leaves few to several, scalelike, lanceolate to subulate-lanceolate, base semi-amplexicaul. Capitulum solitary. Involucre cylindric, usually 1.8–2.5 × 0.7–1.3 cm at anthesis, to 3.5 × 1.8 cm in fruit. Phyllaries abaxially glabrous, apex obtuse to acute; outermost phyllaries triangular to sometimes obliquely triangular-ovate. Florets yellow, usually to 1.5–1.7 × as long as involucre. Achene whitish to pale brown, cylindric, 1.2–1.4 cm, with smooth ribs, glabrous. Pappus dirty white to dirty yellow, usually 1.5–1.8 cm. Fl. and fr. Feb–Sep.

Mountain slopes, hills, wastelands, thickets; 200–2500 m. Anhui, Gansu, Hebei, Henan, Jiangsu, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi [Mongolia].

Scorzonera sinensis is delimited from *S. austriaca* largely by its undulate leaves, which it shares, however, with *S. crispa* M. Bieberstein (*S. austriaca* subsp. *crispa* (M. Bieberstein) Lipschitz & Krascheninnikov) from Crimea and Kazakhstan. According to Lipschitz (Fragm. Monogr. Scorzonera 1: 121. 1935; Fl. URSS 29: 68–69. 1964), it differs from the latter by basally more shortly attenuate, green rosette leaves and undivided stems with more numerous bracts. See also note under *S. austriaca*.

9. Scorzonera subacaulis (Regel) Lipschitz, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 42: 160. 1933.

小鸦葱 xiao ya cong

Scorzonera austriaca Willdenow var. *subacaulis* Regel, Trudy Imp. S.-Peterburgsk. Bot. Sada 6: 323. 1880; *S. austriaca* var. *intermedia* Regel (1867), not Gaudin (1829).

Herbs, acaulescent or to 10 cm, perennial, rosulate. Rootstock dark brown, terete, ca. 8 mm in diam. Caudex woody, with fibrous and lacerate leaf sheath residues. Stems solitary or more rarely 2, unbranched, floccose arachnoid hairy especially apically. Rosette leaves linear, 8–10 × 0.2–0.4 cm, glabrous, apex acuminate. Stem leaves 1 or 2, scalelike, lanceolate. Capitulum solitary. Involucre broadly cylindric, 1–1.5 cm in diam. in fruit. Phyllaries glabrous or basally somewhat arachnoid hairy, apex acute; outermost phyllaries triangular to ovate. Florets yellow, ca. 1.5 × as long as involucre. Corolla ligule with dark red striae. Achene cylindric, 8–10 mm, with smooth ribs, glabrous. Pappus dirty white, ca. 1.2 cm. Fl. and fr. Jun–Jul.

Grassy mountain slopes; above 2600 m. Xinjiang [Kazakhstan, Kyrgyzstan].

The delimitation of *Scorzonera subacaulis* and subacaulescent forms of *S. radiata* (the latter without fibrous and lacerate leaf sheath residues and with the florets 2 × as long as the involucre) appears often somehow blurred in the literature (e.g., Lipschitz, Fl. URSS 29: 67–68. 1964). Regel (Bull. Soc. Imp. Naturalistes Moscou 40(3–4): 170. 1867) considered even an intermediate position of this taxon between both species. See also note under *S. austriaca*.

10. Scorzonera curvata (Poplavskaja) Lipschitz, Fl. URSS 29: 72. 1964.

丝叶鸦葱 si ye ya cong

Scorzonera austriaca Willdenow var. *curvata* Poplavskaja, Trudy Bot. Muz. Imp. Akad. Nauk 15: 38. 1916; *S. angustifolia* Thomson; *S. humilis* Linnaeus var. *linearifolia* Candolle.

Herbs 4–7 cm tall, perennial, rosulate. Rootstock dark brown, cylindric, ca. 1.5 cm in diam. Caudex densely covered with fibrous and lacerate leaf sheath residues. Stems solitary or few, erect, glabrous. Rosette leaves filiform to filiform-linear, 3–10 cm × 1–1.5 mm, usually flat or twisted, glaucous, glabrous but margin basally arachnoid lanate, apex acuminate. Stem leaves absent or few, scalelike, subulate-lanceolate. Capitulum solitary. Involucre campanulate to narrowly campanulate, ca. 1 cm in diam. in fruit. Phyllaries abaxially glabrous, apex acute to subobtuse; outermost phyllaries triangular to triangular-lanceolate, 5–8 × 2–3 mm. Florets yellow. Achene cylindric, with smooth to tuberculate ribs, shortly villous. Pappus pale brown, ca. 1.2 cm. Fl. and fr. May–Jun.

Hills, dry mountain slopes; 500–2500 m. Heilongjiang, Nei Mongol, Qinghai [Mongolia, E Russia].

See note under *Scorzonera austriaca*.

11. Scorzonera ikonnikovii Lipschitz & Krascheninnikov in Lipschitz, Fragm. Monogr. Scorzonera 1: 109. 1935.

毛果鸦葱 mao guo ya cong

Scorzonera austriaca Willdenow var. *hebecarpa* C. H. An.

Herbs to 17 cm tall, perennial, rosulate. Rootstock yellow, obconic, ca. 2 cm in diam. Caudex densely covered with brown fibrous and lacerate leaf sheath residues. Stems few, unbranched, glabrous. Rosette leaves narrowly lanceolate, linear-lanceolate, linear-elliptic, or linear, to 15 × 0.2–0.6(–1.5) cm, glabrous, base attenuate, margin undulate, apex usually recurved and acuminate. Stem leaves 2 or 3, brown, scalelike, narrowly lanceolate to subulate-lanceolate. Capitulum solitary. Involucre campanulate to subglobose, to 2–2.5 × 1.5–2 cm in fruit. Phyllaries abaxially glabrous, apex acute to obtuse; outermost phyllaries triangular to ovate-triangular, to 7 × 2.5 mm. Florets yellow. Achene cylindric, ca. 1 cm, with smooth ribs, shortly villous. Pappus dirty yellow, ca. 1.2 cm. Fl. and fr. Apr–May. 2*n* = 14.

Mountain slopes; 1300–1800 m. Liaoning, ?Nei Mongol, Xinjiang (Jinghe) [Mongolia].

Scorzonera ikonnikovii is very similar to *S. austriaca* (see also note there) but is distinguished by its villous achenes. Centered in Mongolia, it seems to be rare in China, reaching only into the NW and NE. Its delimitation from *S. manshurica* needs closer consideration.

12. Scorzonera manshurica Nakai, Rep. Inst. Sci. Res. Manchoukuo 1: 173. 1937.

东北鸦葱 dong bei ya cong

Scorzonera glabra Ruprecht var. *manshurica* (Nakai) Kitagawa.

Herbs to 14 cm tall, perennial, rosulate. Rootstock obconic, ca. 3 cm in diam. Caudex densely covered with brown fibrous and lacerate leaf sheath residues. Stems few, unbranched, conspicuously floccose or lanate when young, soon glabrescent. Rosette leaves linear, 8–10 × 0.3–0.4 cm, adaxially densely lanate when young, glabrescent, base attenuate, margin flat and basally lanate, apex acute to long acuminate. Stem leaves 1–3, scalelike, subulate-triangular, margin and adaxially lanate. Capitulum solitary. Involucre campanulate, to 2 × 1.8 cm in fruit. Phyllaries abaxially white puberulent and tinged with purple, apex obtuse to acute; outermost phyllaries triangular to ovate-triangular, largest ca. 7 × 3 mm. Achene dirty yellow, cylindric, 7–8 mm, with smooth ribs, sparsely to densely villous. Pappus dirty yellow, 1–1.5 cm. Fl. and fr. Apr–May.

● Dry mountain slopes. Heilongjiang, ?Jilin, Liaoning, Nei Mongol.

Scorzonera manshurica seems close to *S. ikonnikovii*, and the delimitation between the two species should be reassessed. See also note under *S. austriaca*.

13. Scorzonera albicaulis Bunge, Enum. Pl. China Bor. 40. 1833.

华北鸦葱 hua bei ya cong

Achyroseris albicaulis (Bunge) Kamelin & Tagaev; *A. macrosperma* Schultz Bipontinus; *Scorzonera albicaulis* f. *flavescens* Nakai; *S. albicaulis* subsp. *macrosperma* (Turczaninow ex Candolle) Voroschilov; *S. albicaulis* var. *macrosperma* (Turczaninow ex Candolle) Kitagawa; *S. albicaulis* f. *rosea* Nakai; *S. macrosperma* Turczaninow ex Candolle; *S. macrosperma* f. *angustifolia* Debeaux.

Herbs to 1.2 m tall, perennial. Rootstock cylindric to obconic, ca. 1.5 cm in diam. Caudex with brown scarious leaf sheath residues. Stem usually solitary, erect, branched apically, floccosely arachnoid hairy especially apically, glabrescent, leafy. Basal leaves rosulate, usually early deciduous, linear to linear-elliptic, to 40 × 0.3–2 cm, glabrous, margin entire, apex acuminate. Stem leaves similar to basal leaves but shorter. Synflorescence sparsely and usually laxly corymbiform, with usually 2–7 capitula. Involucre cylindric, 2–2.5 × 0.5–0.7 cm at anthesis, 3.5–4.2 × 0.8–1.3 in fruit. Phyllaries abaxially glabrous or thinly arachnoid hairy, glabrescent; outermost phyllaries triangular-ovate to ovate-lanceolate, 5–8 × 2–4 mm. Florets yellow, ca. 1.5 × as long as involucre. Achene pale brown, cylindric and from middle third distinctly tapering toward apex, usually 1.7–2.3 cm, with smooth ribs, glabrous. Pappus straw-colored, usually 2.2–2.8 cm, bristles basally connate and caducous as an entity. Fl. and fr. May–Sep. 2*n* = 14.

Mountain valleys, forests, forest margins, scrub, feral fields, fields; 200–2500 m. Anhui, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan [Korea, Mongolia, Russia (SE Asian part)].

Achyroseris macrosperma Schultz Bipontinus (1845) and *Scorzonera macrosperma* Turczaninow ex Candolle (1838) are, in spite of having the same epithet, independently described heterotypic synonyms.

14. Scorzonera iliensis Krascheninnikov, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 1: 178. 1933.

北疆鸦葱 bei jiang ya cong

Herbs 35–70 cm tall, perennial, with a taproot. Caudex with leaf sheath residues. Stems solitary or few, erect, branched apically, glabrous or somewhat floccose and glabrescent, leafy. Basal leaves linear to linear-lanceolate, 10–25 × 0.4–1 cm, margin flat, apex acuminate. Stem leaves similar to basal leaves but smaller. Synflorescence laxly corymbiform, with few capitula. Involucre cylindric, 1.4–1.6 × ca. 0.5 cm at anthesis, to 3 cm in fruit. Phyllaries arachnoid branched hairy; outermost phyllaries triangular to ovate-triangular. Achene cylindric, 1–1.5 cm, with smooth ribs, glabrous. Pappus dirty white, to 2 cm. Fl. and fr. Jul–Aug.

Stony thickets; above 900–1700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Uzbekistan].

See note under the *Scorzonera transiliensis*.

15. Scorzonera transiliensis Popov in Lipschitz, Fragm. Monogr. Scorzonera 2: 148. 1939.

橙黄鸦葱 cheng huang ya cong

Herbs 25–75 cm tall, perennial, with a taproot. Caudex woody, sometimes branched, with sparse leaf sheath residues. Stems solitary or few, erect, sparsely branched apically, glabrous or weakly floccose with branched hairs, leafy. Basal leaves linear to linear-lanceolate, usually 5–20 × 0.4–0.8 cm, margin flat, apex acuminate. Stem leaves similar to basal leaves but smaller. Synflorescence very loosely corymbiform, with few capitula. Involucre cylindric, ca. 1.5 × 0.5 cm at anthesis, to 3–3.5 cm in fruit. Phyllaries arachnoid branched hairy. Florets dark orange. Achene cylindric, ca. 1.5 cm, with smooth ribs, glabrous. Pappus dirty white, ca. 2 cm.

Meadows on mountain slopes; ca. 1700 m. Xinjiang [Kazakhstan, Kyrgyzstan].

Scorzonera transiliensis is closely related to *S. iliensis* and said to be mainly distinguished by its dark orange florets (Lipschitz, Fl. URSS 29: 84. 1964). It is endemic to the Zailiyskiy and Kungey Alatau (SE Kazakhstan, N Kyrgyzstan) and the Ketmen range of the Tien Shan (SE Kazakhstan) and Tian Shan (NW China). It has been listed for Xinjiang by C. H. An (Fl. Xinjiang. 5: 395. 1999), and the above description is based on that work and the original description. The status of this taxon requires further studies.

16. Scorzonera pubescens Candolle, Prodr. 7: 122. 1838.

基枝鸦葱 ji zhi ya cong

Herbs 7–20 cm tall, perennial, with grayish short branched hairs. Rootstock dark brown, cylindric, ca. 1 cm in diam. Caudex densely covered with leaf sheath residues. Stems solitary to few, erect, branched from base, basally leafy; branches ascending-erect. Basal leaves linear, 5–20 × 0.1–0.5 cm, margin flat, apex acuminate. Stem leaves similar to basal leaves but smaller. Synflorescence diffusely corymbiform, with few capitula. Involucre campanulate, 1.3–2 × 0.3–1 cm. Phyllaries abaxially arachnoid hairy; outermost phyllaries ovate to lanceolate. Florets yellow, sometimes ligule adaxially reddish, ca. 1.5 × as long as involucre. Achene cylindric, 1–1.2 cm, with tuberculate

ribs, glabrous. Pappus white tinged with yellow, ca. 1.5 cm. Fl. and fr. Jun.

Mountain slopes, hills, grasslands, dry river valleys; 600–1800 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia (W Asian part), Tajikistan].

17. Scorzonera inconspicua Lipschitz ex Pavlov, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 42: 139. 1933.

皱叶鸦葱 zhou ye ya cong

Scorzonera marschalliana C. A. Meyer var. *latifolia* Ruprecht; *S. marschalliana* var. *oblongifolia* Trautvetter; *S. tianshanensis* C. H. An.

Herbs usually 8–25 cm tall, perennial. Rootstock ca. 8 mm in diam. Caudex woody, with dark brown or pale yellow scarious leaf sheath residues. Stems solitary or few, branched from base or from middle with curved-erect branches, stellate puberulent, basally leafy. Basal leaves narrowly elliptic to narrowly lanceolate, 5–20 × 0.4–0.7[–2] cm, stellate puberulent, glabrescent, base attenuate, margin mostly undulate, apex acuminate. Stem leaves few, smaller than basal leaves but otherwise similar. Synflorescence laxly corymbiform, with usually 2–4 long-pedunculate capitula. Involucre cylindric, 1.5–2 × 0.5–0.8 cm at anthesis, to usually 2.5–3 × 1–1.3 cm in fruit. Phyllaries stellate puberulent, glabrescent; outermost phyllaries triangular-ovate, 3–8 × 4–5 mm. Florets yellow, ca. 1.5 × as long as involucre. Achene cylindric, 1–1.4 cm, with tuberculate ribs, glabrous. Pappus dirty white to straw-colored, usually 1.5–2 cm. Fl. and fr. May–Aug. 2*n* = 14.

Stony slopes, dry steppes; 800–1700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan].

We have not seen material of *Scorzonera tianshanensis* (C. H. An, Fl. Xinjiang. 5: 480. 1999), but, from the description given, the only difference between it and *S. inconspicua* appears to be the presence of "two white membranous wings along the corolla tube," which perhaps may be an artifact but certainly not a suitable diagnostic feature whatsoever.

18. Scorzonera pusilla Pallas, Reise Russ. Reich. 2: 744. 1773.

细叶鸦葱 xi ye ya cong

Scorzonera astrachanica Candolle; *S. circinnata* Pallas, nom. illeg. superfl.; *S. popovii* Lipschitz; *Takhtajaniantha pusilla* (Pallas) Nazarova.

Herbs 5–20 cm tall, perennial, with a globose tuber to some cm below surface. Caudex with pale brown adaxially lanate leaf sheath residues becoming somewhat lacerate and subfibrous with age. Stems few, slender, erect, usually apically branched, sparsely pubescent or glabrescent, leafy. Basal leaves linear to filiform-linear, 1–1.5 × 0.1–0.3 cm, arachnoid hairy, margin flat, apex acuminate and often somewhat hooked. Stem leaves similar to basal leaves. Synflorescence sparsely corymbiform, with few capitula or capitulum solitary. Involucre narrowly cylindric, ca. 1.8 × 0.5–0.7 cm at anthesis, prolonged in fruit. Phyllaries abaxially arachnoid hairy; outermost phyllaries ovate, ca. 5 × 3.5 mm, apex acute. Florets yellow. Achene cylindric, ca. 8 mm, with smooth ribs, glabrous. Pappus dirty white, ca. 2.3 cm, plumose for most of length. Fl. and fr. Apr–Jul. 2*n* = 14.

Rocky mountain slopes, gravelly deserts, sandy soils, semiconsolidated sand dunes, saline-alkaline areas, roadsides, wastelands, mountain plains, alluvial plains; 500–3400 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia (SE European part), Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

19. Scorzonera pamirica C. Shih, Acta Phytotax. Sin. 25: 48. 1987.

帕米尔鸦葱 pa mi er ya cong

Herbs 4–13 cm tall, perennial, with an ellipsoid tuber to some cm below surface. Caudex with pale brown or pale yellow glabrous leaf sheath residues becoming lacerate and subfibrous with age. Stems few, slender, erect to arched-erect, sparsely branched apically, glabrous, leafy. Basal leaves linear, 4–8 × 0.1–0.2 cm, glabrous, apex acuminate. Stem leaves similar to basal leaves but smaller. Synflorescence sparsely corymbiform, with few capitula or capitulum solitary. Involucre narrowly cylindric, 1.3–1.5 × ca. 0.4 cm at anthesis, more than 2 cm in fruit. Phyllaries abaxially arachnoid hairy, apex acute to obtuse; outermost phyllaries ovate to narrowly ovate, 4–5 × 2–3 mm. Florets yellow. Achene glabrous, not seen when fully mature. Pappus dirty white, ca. 2 cm or more, scabrid apically or for most of length. Fl. and fr. Jun–Aug.

● Alpine plains, alpine meadows; 3300–3600 m. Xinjiang (Taxkorgan).

Scorzonera pamirica is closely related and very similar to the widespread *S. pusilla*, and their delimitation should be reassessed when more material is available. See also note under *S. aniana*.

20. Scorzonera aniana N. Kilian, **nom. nov.**

长茎鸦葱 chang jing ya cong

Replaced synonym: *Scorzonera elongata* C. H. An & X. L. He, Fl. Xinjiang. 5: 480. 1999, not *Scorzonera elongata* Willdenow, Sp. Pl. 3: 1508. 1803, nom. illeg. superfl. [*Catananche graeca* Linnaeus, Sp. Pl. 2: 813. 1753].

Herbs 30–40 cm tall, perennial, with a globose tuber some cm below surface. Caudex unbranched or branched, with scarious adaxially densely lanate pale brown leaf sheath residues becoming lacerate and subfibrous with age. Stems few to several, erect to arched-erect, branched apically, leafy. Stem leaves linear-lanceolate, to 15 × 0.2–0.3 cm, base inconspicuously attenuate, apex acuminate and often somewhat hooked. Synflorescence sparsely corymbiform, with few capitula. Involucre narrowly cylindric, 2–2.4 × 0.4–0.5 cm at anthesis. Phyllaries with arachnoid hairy and glabrescent margin; outermost phyllaries ovate to ovate-lanceolate, ca. 4 mm. Florets yellow. Achene columnar, ca. 1 cm, with tuberculate ribs, glabrous. Pappus yellowish, 2.4–2.6 cm. Fl. May.

● Sand dunes; 500–800 m. Xinjiang (Ürümqi).

Scorzonera aniana, the epithet referring to the first author of the replaced synonym, is closely related to *S. pusilla* and *S. pamirica*. No material has been seen by the present authors, and the description is based on Fl. Xinjiang. (loc. cit.).

21. Scorzonera mongolica Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 32: 492. 1888.

蒙古鸦葱 meng gu ya cong

Scorzonera fengtienensis Nakai; *S. hotanica* C. H. An; *S. mongolica* var. *putjatae* C. Winkler.

Herbs 5–35 cm tall, perennial, rosulate. Rootstock cylindric. Caudex with brown to pale yellow scarious leaf sheath residues. Stems few to some, grayish green, ascending to more rarely erect, branched apically, glabrous. Rosette leaves narrowly elliptic, elliptic-lanceolate, or linear-lanceolate, 2–13[–20] × 0.4–1.1[–4] cm, usually ± fleshy, glabrous, somewhat glaucous, base attenuate to long attenuate with an adaxially sometimes lanate sheath, apex acute to acuminate. Stem leaves often partly opposite, similar to rosette leaves but shorter. Synflorescence sparsely corymbiform, with few capitula or more rarely capitulum solitary. Involucre narrowly cylindric, usually 1.7–2.2 × 0.4–0.5 cm at anthesis, to 3 × 0.6–0.7 cm in fruit. Phyllaries abaxially arachnoid hairy and glabrescent or glabrous; outermost phyllaries ovate, 3–5 × 2–5 mm, apex acute. Florets yellow, rarely white, slightly longer than involucre. Achene pale yellow, cylindric, 5–7 cm, with smooth ribs, apex somewhat pilose, otherwise ± glabrous. Pappus white, 2–2.8 cm. Fl. and fr. Apr–Aug.

Saline meadows, saline sands, alkaline lands, dry lake basins, floodplains, lake margins, grassy beaches; near sea level to 3200 m. Gansu, Hebei, Henan, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Xinjiang [Kazakhstan, Mongolia].

22. Scorzonera ensifolia M. Bieberstein, Fl. Taur.-Caucas. 2: 235. 1808.

剑叶鸦葱 jian ye ya cong

Lasiospora ensifolia (M. Bieberstein) Cassini.

Herbs usually 20–40 cm tall, perennial, sparsely rosulate. Rootstock cylindric. Caudex with entire hardened adaxially abundantly reddish brown lanate leaf sheath residues. Stems solitary or few, ± erect, sparsely branched apically, ± pubescent or rarely glabrous, densely leafy. Rosette leaves linear-lanceolate to linear, to 20 × 0.3–0.8 cm, rather rigid, apex filiform acuminate. Stem leaves many, similar to rosette leaves, sparsely pubescent or glabrous. Synflorescence corymbiform, usually with 2–4 capitula. Involucre cylindric, to 2.5 × 1–1.5 cm. Phyllaries abaxially arachnoid hairy; outermost phyllaries lanceolate, apex acuminate and bent. Florets yellow, ca. 1.5 × as long as involucre. Achene cylindric, usually 7–8 mm, densely villous. Pappus pale brownish, 2–2.5 cm. Fl. and fr. May–Aug. 2*n* = 12.

Sand dunes, wastelands, sandy soils; 500–600 m. Xinjiang [Kazakhstan, Russia (C, E, and S European parts); Europe].

23. Scorzonera sericeolanata (Bunge) Krascheninnikov & Lipschitz, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 43: 141. 1934.

灰枝鸦葱 hui zhi ya cong

Scorzonera tuberosa Pallas var. *sericeolanata* Bunge, Beitr. Fl. Russl. 200. 1852; *S. rubroviolacea* Godwinski.

Herbs 8–20 cm tall, perennial, with a globose tuber some cm below surface. Stems solitary or few, weak, erect, sparsely branched, white sericeous pubescent. Basal leaves few, linear, 5–20 × 0.2–0.8 cm, arachnoid hairy, glabrescent, or adaxially glabrous, base attenuate, margin flat, apex acuminate. Stem leaves similar to basal leaves but base ± amplexicaul. Synflorescence laxly corymbiform, with 5–7 capitula. Involucre narrowly cylindric to obconic, ca. 6 mm in diam. Phyllaries abaxially densely pubescent; outermost phyllaries narrowly triangular, apex acute. Florets yellow. Corolla with purplish red veins. Achene cylindric, 5–7 mm, densely sericeous. Pappus whitish, usually 1–1.2 cm. Fl. and fr. Apr–Jun.

Deserts, semiconsolidated sand dunes; 300–1400 m. Xinjiang [Kazakhstan, Russia (SW Asian part), Uzbekistan].

C. H. An (in Fl. Xinjiang. 5: 401. 1999) also reported the similar and related *Scorzonera tuberosa* Pallas for Xinjiang. That species is distributed in E and S European Russia and Kazakhstan and had not been reported before from farther east. The corresponding material has not been seen by the present authors, and the report needs confirmation.

24. Scorzonera circumflexa Krascheninnikov & Lipschitz, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 43: 148. 1934.

皱波球根鸦葱 zhou bo qiu gen ya cong

Herbs (8–)15–25 cm tall, perennial, with a globose tuber some cm below surface. Caudex rather inconspicuous, reddish brown lanate, with few scarious leaf sheath residues. Stems 1–3, erect, weak, sparsely branched apically, densely pubescent. Basal leaves few, broadly lanceolate, usually 5–15 × 0.8–1.5 cm, densely tomentose, base attenuate, margin undulate, apex acute to acuminate and often curled. Stem leaves similar to basal leaves but not basally attenuate. Synflorescence sparsely corymbiform, with 2 or 3 capitula. Involucre narrowly cylindric to obconic. Phyllaries abaxially densely pubescent; outermost phyllaries triangular-ovate to lanceolate. Florets yellow, purplish red when dry. Achene cylindric, 6–7 mm, densely sericeous. Pappus brownish, ca. 9 mm. Fl. and fr. Apr–May. 2*n* = 12.

Stony slopes, mountain plains; ca. 1100 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan].

52. PODOSPERMUM Candolle in Candolle & Lamarck, Fl. Franç. 4: 61. 1805, nom. cons.

柄果菊属 bing guo ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Arachnospermum F. W. Schmidt.

Herbs, [annual or] biennial or perennial, often with woody caudex and rosulate. Leaves pinnately divided, base with semiamplexicaul usually persistent sheath. Involucre cylindric, usually distinctly prolonged toward fruiting. Phyllaries in several series, often

subapically corniculate. Receptacle naked. Achene with conspicuous cylindric carpopodium usually 1/5–1/3 as long as achene body. Pappus of strong bristles; bristles softly fimbriately plumose for most of length and apically scabrid.

About 17 species: N Africa, C and SW Asia, Europe; one species in China.

Molecular phylogenetic analyses by Mavrodiev et al. (Taxon 53: 699–712. 2004) revealed that *Scorzonera* in its wider sense is polyphyletic and provided support for the recognition of *Podospermum* as a separate genus.

1. Podospermum songoricum (Karelin & Kirilov) Tzvelev, Rast. Tsentral. Azii 14b: 104. 2008.

准噶柄果菊 zhun ga bing guo ju

Podospermum laciniatum (Linnaeus) Candolle var. *songoricum* Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 15: 396. 1842; *Scorzonera songorica* (Karelin & Kirilov) Lipschitz & Vassilczenko.

Herbs usually 15–40 cm tall, biennial to perennial?, rosulate, glabrous or sparsely arachnoid hairy. Caudex with complete leaf sheath residues. Stems few, sparsely branched apically, sparsely leafy. Rosette leaves linear-elliptic or narrowly elliptic to elliptic, pinnatipartite to pinnatisect, sometimes not divided, base attenuate and petiole-like; lateral lobes few, in middle third of blade, linear, linear-lanceolate, or narrowly elliptic, to 1 cm; terminal lobe much longer than lateral lobes, narrowly elliptic, linear-elliptic, or linear. Stem leaves linear-elliptic to linear, mostly undivided. Synflorescence sparsely corymbiform, with few capitula. Capitula long pedunculate. Involucre cylindric, 1–1.2 × 0.5–0.6 cm at anthesis, to 2 × 1 cm in fruit. Phyllaries sparsely arachnoid hairy and glabrescent, often subapically corniculate; outer phyllaries narrowly triangular to lanceolate, longest ca. 1/2 or more as long as inner linear-lanceolate phyllaries. Florets yellow, slightly longer than involucre. Achene gray, cylindric, 1–1.2 cm, ribs smooth, carpopodium 1/5–1/4 as long as achene body. Pappus dirty white, 1.1–1.2 cm. Fl. and fr. May–Jun. 2*n* = 14, 28.

Steppes; ca. 1000 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

No material of *Podospermum songoricum* from China has been seen by the present authors, but its presence in Xinjiang is confirmed by C. H. An (Fl. Xinjiang. 5: 389. 1999). The description is based on Lipschitz (Fl. URSS 29: 40. 1964) and material from neighboring countries.

53. KOELPINIA Pallas, Reise Russ. Reich. 3: 755. 1776.

蝎尾菊属 xie wei ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, annual. Stem solitary, delicate. Leaves narrowly grasslike, margin entire. Synflorescence diffuse. Capitula with few to some florets. Involucre small, cylindric at anthesis, spreading in fruit. Phyllaries in 1 outer and 1 inner series. Receptacle naked. Achene columnar-scorpioid, usually with 5 ribs, abaxially and apically hooked spiny. Pappus absent.

Five species: N Africa, C, S, and SW Asia, S Europe; one species in China.

1. Koelpinia linearis Pallas, Reise Russ. Reich. 3: 755. 1776.

蝎尾菊 xie wei ju

Rhagadiolus koelpinia Willdenow.

Herbs 5–35 cm tall. Stem solitary, slender, branched from base, glabrous or sparsely pilosulose, remotely leafy. Stem leaves linear to filiform, 4.5–15 × 0.1–0.5(–0.7) cm, glabrous or subglabrous. Synflorescence diffusely racemiform to paniculiform, with 2–5 capitula or capitulum solitary. Capitula with 5–9 florets. Involucre at anthesis cylindric, 5–7 mm. Phyllaries glabrous or sparsely hairy, apex acute; outer phyllaries 2 or 3, narrowly triangular, ca. 2 × 0.5 mm; inner phyllaries 5, linear-lanceolate. Florets pale yellow, not or slightly exceeding involucre. Achene brownish, columnar-scorpioid, ca. 1 cm, abaxially with antrorse and apically with retrorse rigid hooked needlelike spines. Fl. and fr. Feb–Jul. 2*n* = 14, 36, 40, 42, 54, 56.

Gravelly deserts; 400–1000 m. Xinjiang, SW Xizang [Afghanistan, NW India, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Russia (S European part), Tajikistan, Turkmenistan, Uzbekistan; N Africa, SW Asia, SW Europe].

54. EPILASIA (Bunge) Bentham in Bentham & J. D. Hooker, Gen. Pl. 2: 532. 1873.

鼠毛菊属 shu mao ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Scorzonera sect. *Epilasia* Bunge, Beitr. Fl. Russl. 200. 1852.

Herbs, annual, white pubescent or glabrous. Leaves undivided. Involucre ovoid-cylindric to globose. Phyllaries in 2 rows; outer phyllaries herbaceous, leaflike, usually longer than [or equaling] inner phyllaries; inner phyllaries usually 5. Receptacle naked. Florets pale yellow [or pale red or blue]. Achene blackish [or gray], ± cylindric, ribbed, ribs smooth or spinulose, base with somewhat broadened hollow cylindric carpophore, glabrous, apex truncate or apical half conic, unribbed, and covered and hidden by caplike pappus disk with pappus. Pappus arising from flat of caplike conic pappus disk, grayish or brownish, of soft bristles in several rows, persistent, very densely long lanately softly fimbriately plumose, longer bristles apically scabrid.

About three species: C and SW Asia; two species in China.

1a. Apex of achene crowned with flat pappus disk and pappus ..... 1. *E. acrolasia*
1b. Apical half of achene hidden by conic caplike pappus disk and pappus ..... 2. *E. hemilasia*

1. Epilasia acrolasia (Bunge) C. B. Clarke ex Lipschitz, Fragm. Monogr. Scorzonera 2: 29. 1939.

顶毛鼠毛菊 ding mao shu mao ju

Scorzonera acrolasia Bunge, Beitr. Fl. Russl. 202. 1852; *Epilasia ammophila* (Bunge) C. B. Clarke ex Tzvelev; *S. ammophila* Bunge.

Herbs 6–25 cm tall, annual. Stem erect, moderately branched often already from base or more rarely unbranched, arachnoid hairy, glabrescent, leafy. Leaves narrowly spatulate, narrowly lanceolate, broadly lanceolate, or rarely ovate-lanceolate, 1–4(–5) × 0.2–1(–2) cm, ± arachnoid hairy, base attenuate and finally semiamplexicaul, margin flat or somewhat undulate and densely microdentate, apex acute to acuminate or more rarely obtuse. Synflorescence diffuse, paniculiform to corymbiform, with several capitula or more rarely capitulum solitary. Involucre ovoid-cylindric to globose, 1.1–1.4 × 0.6–0.8 cm at anthesis, 1.5–1.8 × ca. 1.5 cm in fruit (outer phyllaries not counted). Outer phyllaries linear-lanceolate, usually 2–3.5 cm, herbaceous, similar to upper stem leaves, distinctly longer than inner phyllaries; inner phyllaries lanceolate, leathery, margin somewhat scarious, apex obtuse to acute. Florets pale yellow [or purplish], to 1.3 × as long as involucre. Achene blackish, ± concolorous, cylindric, 4–5 mm, with hollow cylindric 1–1.5 mm carpophore, usually with 5 smooth or somewhat spinulose main ribs and ca. 10 secondary ribs. Pappus gray, usually 8–9 mm. Fl. and fr. May–Jun. 2*n* = 12.

Leeward slopes on sand dunes, clay and gravelly areas; 500–1000 m. Xinjiang [Afghanistan, Kazakhstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

2. Epilasia hemilasia (Bunge) C. B. Clarke ex Kuntze, Trudy Imp. S.-Peterburgsk. Bot. Sada 10: 202. 1887.

鼠毛菊 shu mao ju

Scorzonera hemilasia Bunge, Beitr. Fl. Russl. 201. 1852; *Epilasia cenopleura* (Bunge) C. B. Clarke ex Soják; *E. hemilasia* var. *nana* (Boissier & Buhse) Kuntze; *E. intermedia* (Bunge) C. B. Clarke ex Soják; *S. cenopleura* Bunge; *S. intermedia* Bunge; *S. nana* Boissier & Buhse.

Herbs usually 5–50 cm tall, annual. Stem ascending to erect, unbranched or moderately branched often already from base, arachnoid hairy, glabrescent, basally densely and higher up distantly leafy. Leaves narrowly spatulate or narrowly lanceolate to linear-lanceolate, 2–9 × 0.3–1.5 cm, ± arachnoid hairy, base attenuate and finally semiamplexicaul, margin densely microdentate, apex acute to acuminate. Synflorescence diffuse, paniculiform to corymbiform, with several capitula or more rarely capitulum solitary. Involucre ovoid-cylindric to globose, 1.2–1.4 × 0.8–1 cm at anthesis, 1.5–1.7 × ca. 1.5 cm in fruit (outer phyllaries not counted). Outer phyllaries lanceolate, usually 2–4 cm, herbaceous and similar to upper stem leaves, distinctly longer than inner phyllaries, apex acuminate; inner phyllaries lanceolate, leathery, margin somewhat scarious, apex obtuse to acute. Florets pale yellow, slightly longer than involucre. Achene blackish, cylindric, 6–7 mm, with hollow ± cylindric 1–2 mm carpophore, body in lower half with 10 pale narrow raised often somewhat spinulose ribs, upper half covered and hidden by conic caplike pappus disk and pappus. Pappus gray, 8–10 mm. Fl. and fr. Apr–May. 2*n* = 12, 24.

Sand or clay areas, grasslands; 800–1500 m. Xinjiang [Afghanistan, Kazakhstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

The unique achene of *Epilasia hemilasia* is interpreted here through a modification of the pappus disk. Normally the pappus disk is a ± flat disklike (or because of its central opening for the vascular strands connecting achene and floret actually rather ringlike) structure bearing the pappus bristles and crowning the achene apex. In this species, the pappus disk is modified to a caplike structure covering the equally fertile apical half of the achene. This interpretation is supported by the fact that the outer series of plumose pappus bristles arises from the callose ringlike structure in the middle third of the achene (morphologically indistinguishable from the outer series of bristles on the pappus disk of *E. acrolasia*), while other bristles are basally shortly adnate to and then arise from the unribbed, pale brown surface between the callose ring and the achene apex, and the innermost series of ca. 5 bristles arises at the achene apex. The trichomes covering the surface between the bristles are considered as homologues to those at the base of the bristles in *E. acrolasia* and to the soft fimbriae of the plumose *Scorzonerinae* pappus in general.

55. TRAGOPOGON Linnaeus, Sp. Pl. 2: 789. 1753.

婆罗门参属 po luo men shen shu

Shi Zhu (石铸 Shih Chu); Alexander P. Sukhorukov, Evgeny V. Mavrodiev

Herbs, perennial, biennial, or rarely annual, glabrous or tomentulose to floccose [or lanate] especially at leaf bases and below capitula, often glabrescent; if biennial then vertical roots spindle-shaped; if perennial then with well-developed caudex. Stem simple or sparingly branched. Leaves basal and cauline, sessile, linear, lanceolate, or narrowly oblong, margin entire or undulate. Capitulum terminal, solitary or sometimes capitula few to many, large, with (20–)40–180 or more florets; peduncle often apically inflated and normally without bracts. Involucre cylindric at anthesis, mostly 10–20 mm or more in diam. Phyllaries 5–15(or 16), in 1(or 2) row(s), linear-lanceolate, triangular-lanceolate, or linear, ± equal, abaxially glabrous [with intertwining hairs], margins white and narrowly pellucid, apex acute. Receptacle naked. Florets with ligules yellow, mauve, orange, purple, or violet. Achene dark to pale brown, straw-colored, or whitish, heteromorphic, outer ones ± cylindric or curviform (fusiform), central ones cylindric and less tuberculate or smooth; achene body normally tuberculate, with 5 fairly well-differentiated ribs, with or rarely without hollows in pericarp; beak

slender or stout if present; pappus disk ± pubescent. Pappus persistent, dirty white, yellowish, or slightly fulvous; awns 12–20 or more in 1 or 2 rows, unequal, softly fimbriately plumose, apically scabrid.

More than 150 species: mainly in C and SW Asia and S Europe; 19 species (two endemic, one introduced) in China.

1a. Outer achenes (without pappus) 3.7–4.5 cm; ligules violet; cultivated/alien biennial or annual plants ..... 11. *T. porrifolius*
1b. Outer achenes (without pappus) not more than 3.5 cm; ligules of various colors; non-cultivated perennial or biennial plants.
2a. Peduncle mostly reduced; small plants to 20 cm tall ..... 18. *T. verrucosobracteatus*
2b. Peduncle not reduced, always well developed; plants also taller.
3a. Pappus awns clearly unequal, longest 2–5 ca. 7 mm and remainder ca. 4 mm; achenes 1–1.3 cm, beakless ..... 19. *T. heteropappus*
3b. Pappus awns slightly unequal, length ratio ca. 1.2:1; outer achenes longer than 2 cm.
4a. Peduncle with dark hairs; ligules violet; plants biennial ..... 17. *T. sibiricus*
4b. Peduncle glabrous or tomentulose to floccose; florets of various colors; plants biennial or perennial.
5a. Perennial polycarpics 10–35(–40) cm tall; ligules mauve, violet, purplish, rarely (*T. gracilis*) adaxially yellow but then abaxially with pink or mauve spot.
6a. Outer achenes (without pappus) 1–2 cm, body pale brown, 1.2–1.6 mm in diam., and terete or sometimes with 5 fairly well-differentiated ribs, beak slender, 0.2–0.6 mm in diam.; hollows in pericarp 40–50 µm in diam.; pappus dirty white; plants to 20(–30) cm tall.
7a. Ligules adaxially yellow, abaxially with a pink or mauve spot; pappus always slightly longer than achene body ..... 9. *T. gracilis*
7b. Ligules reddish purple; pappus equaling or slightly shorter than achene body ..... 10. *T. subalpinus*
6b. Outer achenes (without pappus) (1.8–)2–2.7(–3) cm, body whitish or sometimes with a tinge of red, (1.7–)1.8–2.6 mm in diam., and always with 5 fairly well-differentiated ribs, beak stout, 0.9–1.1 mm in diam.; hollows in pericarp more than 60 µm in diam.; pappus fulvous or fulvous tinged with red; plants (15–)20–40 cm tall.
8a. Achene:pappus ratio ca. 1.5:1; basal leaves lanceolate ..... 14. *T. elongatus*
8b. Achene:pappus ratio 1–1.2:1; basal leaves oblong or elliptic.
9a. Peduncle apically distinctly inflated ..... 12. *T. kasachstanicus*
9b. Peduncle apically ± not inflated.
10a. Plants glabrous ..... 16. *T. montanus*
10b. Plants tomentulose to floccose.
11a. Beak of outer achenes well differentiated from body ..... 13. *T. marginifolius*
11b. Beak of outer achenes slightly differentiated from body ..... 15. *T. ruber*
5b. Biennial monocarpics 40–150 cm tall; ligules yellow or yellowish orange.
12a. Peduncle apically distinctly inflated.
13a. Outer achenes (without pappus) 2–2.3 cm, body 2–2.5 mm in diam., beak 2–5 mm and stout ..... 7. *T. sabulosus*
13b. Outer achenes (without pappus) more than 2.3 cm, body to 2 mm in diam., beak 0.7–1.7 cm and slender.
14a. Phyllaries 6–9 cm; outer achenes with pappus 5.5–7 cm ..... 1. *T. capitatus*
14b. Phyllaries 4–5.5(–6) cm; outer achenes with pappus 4.4–6 cm.
15a. Number of phyllaries 5–8 ..... 2. *T. pseudomajor*
15b. Number of phyllaries (8–)10–12(–14) ..... 3. *T. dubius*
12b. Peduncle apically not or only slightly inflated.
16a. Outer achene with beak to 3 mm or without beak; plants floccose ..... 8. *T. stepposus*
16b. Outer achene with beak more than 5 mm; plants glabrous.
17a. Phyllaries slightly longer than florets ..... 4. *T. songoricus*
17b. Phyllaries shorter than florets.
18a. Ligules yellowish orange; outer achenes (without pappus) ca. 1.7 cm ..... 5. *T. altaicus*
18b. Ligules pure yellow; outer achenes (without pappus) (1.8–)2–2.5 cm ..... 6. *T. orientalis*

1. Tragopogon capitatus S. A. Nikitin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 257. 1938.

头状婆罗门参 tou zhuang po luo men shen

Herbs 40–100 cm tall, biennial. Stem simple or branched from lower or middle third, glabrous. Basal and lower cauline leaves linear to lanceolate, 15–35 × 0.3–0.7 cm. Capitula solitary to few; peduncle inflated, 0.7–1.5 cm in diam. Involucre 6.5–9 cm. Phyllaries 8–12(–14), longer than florets and equaling or 1/4 longer than achenes with pappus. Ligules yellow. Outer achenes 3–3.5 cm; body pale brown, ± curviform, 1.4–1.8 mm in diam., with 5 fairly well-differentiated ribs,

tuberculate; beak whitish, 1.5–2.2 cm, slender, non-tuberculate or toothed, apically inflated; pappus disk ± tomentulose. Pappus dirty white, 2.5–3.5 cm. Fl. and fr. Apr–Jun. 2*n* = 12.

Stony steppes, grassy slopes, base of mountains, ditches, roadsides; 500–2000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan].

2. Tragopogon pseudomajor S. A. Nikitin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 258. 1938 [*"pseudomajus"*].

北疆婆罗门参 bei jiang po luo men shen

Herbs 40–80(–100) cm tall, biennial. Stem simple or branched from lower or middle third, erect, glabrous. Basal and lower cauline leaves linear to lanceolate, 15–30 × 0.3–0.5 cm. Capitula solitary to few; peduncle inflated, 7–11 mm in diam. Involucre 4–5.5 cm. Phyllaries (5–)7 or 8, longer than florets, equaling or longer than achenes with pappus. Ligules yellow. Outer achenes 2.4–3 cm; body pale brown, ± curviform, (1.5–)1.7–2 mm in diam., with 5 fairly well-differentiated ribs, tuberculate; beak whitish, 1–1.7 cm, slender, non-tuberculate or toothed, apically ± inflated; pappus disk ± pubescent. Pappus dirty white, 2.2–3 cm. Fl. and fr. Apr–Jun.

Meadows, river valleys, dry mountain slopes, plateaus; 1000–2000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan].

3. Tragopogon dubius Scopoli, Fl. Carniol., ed. 2, 2: 95. 1772.

霜毛婆罗门参 shuang mao po luo men shen

Herbs 40–80(–100) cm tall, biennial. Stem erect, simple or branched from lower or middle third, glabrous. Basal and lower cauline leaves lanceolate to linear, 15–40 × 0.3–0.5 cm. Capitula solitary to few; peduncle inflated, 7–10 mm in diam. Involucre 4–5.5 cm at anthesis, to 7 cm in fruit. Phyllaries 8–12(–14), longer than florets, equaling or longer than achenes with pappus. Ligules yellow. Outer achenes 2.2–3 cm; body pale brown, ± curviform, 1.4–1.7 mm in diam., with 5 fairly well-differentiated ribs, tuberculate; beak whitish, 1.2–1.6 cm, slender, non-tuberculate or toothed, apically inflated; pappus disk pubescent. Pappus dirty white, 2.2–2.8 cm. Fl. and fr. Apr–Jun. 2*n* = 12.

Stony steppes, grassy slopes at base of mountains, ditches; 500–2000 m. Xinjiang [Kazakhstan, W Russia; Europe].

4. Tragopogon songoricus S. A. Nikitin, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 1: 198. 1933.

准噶尔婆罗门参 zhun ga er po luo men shen

Herbs 40–80 cm tall, biennial. Stem erect, branched from middle third or above, glabrous. Basal and lower cauline leaves linear, 15–30 × 0.2–0.5 cm. Capitula solitary to few; peduncle not inflated, 3–5 mm in diam. Involucre 2.5–3.5 cm. Phyllaries 7 or 8(or 9), equaling or longer than florets, equaling or shorter than achenes with pappus. Ligules yellow, often light blue when dry. Outer achenes 1.8–2.2 cm; body pale brown, ± curviform or almost straight, 1.5–1.8 mm in diam., with 5 fairly well-differentiated ribs, tuberculate; beak whitish, 7–10 mm, abruptly differentiated from body, slender, non-tuberculate or toothed, apically ± inflated; pappus disk pubescent. Pappus dirty white, 1.5–2 cm. Fl. and fr. Jun–Aug.

Forest margins, semi-deserts; 500–2200 m. Xinjiang [Kazakhstan, Mongolia, SC Russia].

5. Tragopogon altaicus S. A. Nikitin & Schischkin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 260. 1938.

阿勒泰婆罗门参 a le tai po luo men shen

Herbs, 40–120 cm tall, biennial. Stem erect, strongly branched, glabrous. Basal and lower cauline leaves lanceolate, 15–40 × 0.4–1(–1.3) cm. Capitula few to many; peduncle not inflated, 3–5 mm in diam. Involucre 2.5–3 cm. Phyllaries 7–9(or 10), ca. 2/3 as long as florets, equaling achenes with pappus. Ligules yellowish orange. Outer achenes 1.3–1.8 cm; body pale brown, ± curviform or almost straight, 1.4–1.6 mm in diam., not ribbed and slightly tuberculate; beak pale, 2–6 mm, slender, smooth, apically not inflated; pappus disk ± pubescent. Pappus dirty white, 1–1.5 cm. Fl. and fr. Jun–Aug.

Mountain meadows, stony slopes in hills; 1500–3000 m. N Xinjiang [Kazakhstan, Mongolia, SC Russia].

Tragopogon altaicus has previously been mistaken by C. H. An (Fl. Xinjiang. 5: 380. 1999) for *T. pratensis* Linnaeus, which is not present in China.

6. Tragopogon orientalis Linnaeus var. **latifolius** C. H. An, Fl. Xinjiang. 5: 479. 1999.

东方婆罗门参 dong fang po luo men shen

Herbs 40–100 cm tall, biennial. Stem erect, normally branched, glabrous. Basal and lower cauline leaves linear to lanceolate, 15–30 × 0.3–1 cm. Capitula solitary to few; peduncle not inflated. Involucre 2–3.5 cm. Phyllaries 7–9(or 10), 1.3–1.5 × as long as florets, equaling or shorter than achenes with pappus. Ligules golden yellow. Outer achenes 1.8–2.5 cm; body pale brown, ± curviform or almost, 1.4–1.6 mm in diam., tuberculate; beak whitish, 0.8–1.3 cm, slender, non-tuberculate, apically almost not inflated; pappus disk ± pubescent. Pappus dirty white, 1.5–2.5 cm. Fl. and fr. May–Jul. 2*n* = 12*.

● Mountain meadows; 1000–2100 m. Xinjiang.

The identity of *Tragopogon orientalis* var. *latifolius* needs to be confirmed, including whether or not it belongs to *T. orientalis*. The overall distribution of *T. orientalis* outside of China includes Kazakhstan, Mongolia, and Russia, as well as Europe and North America.

7. Tragopogon sabulosus Krascheninnikov & S. A. Nikitin, Otchet Rabotakh Pochv.-Bot. Otryada Kazakhstansk. Eksped. Akad. Nauk S.S.S.R. 4(2): 294. 1930.

沙婆罗门参 sha po luo men shen

Herbs 50–150 cm tall, biennial. Stem erect, branched from middle third, glabrous. Basal and lower cauline leaves linear to lanceolate, 15–40 × 0.5–1 cm. Capitula few to 10(–12); peduncle inflated under capitulum, 5–10 mm in diam. Involucre 3.5–5(–6) cm. Phyllaries 8–10(–12), smaller than florets and achenes with pappus. Ligules yellow. Outer achenes 2–2.3 cm; body pale brown, slightly curviform or straight, 2–2.5 mm in diam., tuberculate, with 5 fairly well-differentiated ribs; beak 2–5 mm, attenuate or stout, with inflated apex; pappus disk floccose. Pappus dirty white, 2–2.7 cm. Fl. and fr. May–Jul.

Sand dunes; 800–1500 m. Xinjiang [Kazakhstan, SC Russia].

8. Tragopogon stepposus (S. A. Nikitin) Stankov in Stankov & Taliev, Opred. Vyssh. Rast. Evrop. Chasti S.S.S.R. 691. 1949.

草原婆罗门参 cao yuan po luo men shen

Tragopogon podolicus (Besser ex Candolle) Artemczuk subsp. *stepposus* S. A. Nikitin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 261. 1938.

Herbs 40–80(–100) cm tall, biennial. Stem erect, branched from middle third, pubescent. Basal and lower cauline leaves linear, 15–30 × 0.2–0.5 cm. Capitula solitary to few; peduncle not inflated. Involucre 1.5–2.5 cm. Phyllaries 7 or 8, equaling or shorter than florets and achenes with pappus. Ligules yellow. Outer achenes 1–1.3 cm; body pale brown, slightly curviform, 0.9–1.2 cm, ca. 1 mm in diam., tuberculate; beak absent or very short and thick; pappus disk ± pubescent. Pappus dirty white, 1–1.3 cm. Fl. and fr. May–Jul. 2*n* = 12.

Steppes, semi-deserts; 500–1500 m. Xinjiang [Kazakhstan, Russia (W Asian and E European parts)].

9. Tragopogon gracilis D. Don, Mem. Wern. Nat. Hist. Soc. 3: 414. 1821 [*"gracile"*].

纤细婆罗门参 xian xi po luo men shen

Herbs to 20(–30) cm tall, perennial. Caudex stout. Stems few, simple, slender, erect, glabrous. Basal and lower cauline leaves lanceolate-subulate, 7–15 × 0.2–0.4 mm, margin sometimes adaxially rounded. Capitulum solitary; peduncle not inflated. Involucre 1.8–2.3 cm at anthesis, to 3.5 cm in fruit. Phyllaries 5–7, shorter than florets and ± equaling achenes with pappus. Ligules bicolored, abaxially with pink or mauve spot, adaxially yellow. Outer achenes 1.3–1.8 cm; body pale brown, slightly curviform, 1.3–1.6 mm in diam., slightly tuberculate, with small (to 40–50 μm in diam.) hollows in pericarp; beak slender, 5–7 mm. Pappus dirty white, 1.5–2 cm. Fl. and fr. Apr–Jun. 2*n* = 12, 24.

Mountain slopes, river terraces; 2500–3500 m. Xinjiang, Xizang [Afghanistan, N India, Kazakhstan, Kyrgyzstan, Nepal, Tajikistan, Uzbekistan].

10. Tragopogon subalpinus S. A. Nikitin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 271. 1938.

高山婆罗门参 gao shan po luo men shen

Herbs to 10(–25) cm tall, perennial. Caudex stout. Stems few, simple, slender, erect, glabrous. Basal and lower cauline leaves linear-lanceolate, 10–20 × 0.4–1 cm. Capitula solitary to few; peduncle not inflated. Involucre 1.5–2.5(–3.5) cm. Phyllaries 7 or 8, ± equaling florets and achenes with pappus. Ligules reddish purple. Outer achenes 1.3–1.7 cm; body pale brown, straight or slightly curviform, 1.2–1.4 mm in diam., smooth or slightly tuberculate, with small (to 40–50 μm in diam.) hollows in pericarp; beak slender, ca. 6 mm. Pappus dirty white, ca. 1.5 cm. Fl. and fr. Jun–Jul.

Mountain grasslands; 3000–3500 m. Xinjiang [Kazakhstan, Kyrgyzstan].

11. Tragopogon porrifolius Linnaeus, Sp. Pl. 2: 789. 1753.

蒜叶婆罗门参 suan ye po luo men shen

Herbs 40–125 cm tall, biennial or annual. Stem erect, simple or branched from middle third, glabrous or slightly tomentulose. Basal and lower cauline leaves lanceolate or linear, 15–40 × 0.3–0.7 cm, marginally often undulate. 6–12 mm in diam.; peduncle inflated. Capitula solitary to few. Involucre 4–5 cm at anthesis, to 8 cm in fruit. Phyllaries 7 or 8, ca. 1/3 longer than florets and ± equaling achenes with pappus. Ligules violet. Outer achenes 3.7–4.5 cm; body pale brown, curviform, 1.4–1.6 mm in diam.; beak whitish, 2–2.5 cm, slender, smooth, apically inflated; pappus disk ± tomentulose. Pappus dirty white, 2.7–3.7 cm. Fl. and fr. May–Aug. 2*n* = 12.

700–2000 m. Naturalized or cultivated in Beijing, Guizhou, Shaanxi, Sichuan, Xinjiang, and Yunnan [native to Europe].

Tragopogon porrifolius is naturalized in S Africa, Asia, Australia, North America, and perhaps Oceania.

This is a polyphyletic taxon. The relationship of Chinese plants requires more investigation.

12. Tragopogon kasachstanicus S. A. Nikitin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 268. 1938.

中亚婆罗门参 zhong ya po luo men shen

Herbs 20–35 cm tall, perennial. Caudex stout. Stem single, erect, branched from middle third, glabrous, ± lanate, tomentulose, or glabrescent at nodes and below capitula. Basal and lower cauline leaves lanceolate to narrowly oblong, abaxially keeled, sometimes folded along midvein. Capitula solitary to few; peduncle ± inflated, 4–8 mm in diam. Involucre ca. 3 cm at anthesis, 4.5–5 cm in fruit. Phyllaries 8, equaling or shorter than florets. Ligules purple to violet. Outer achenes 2.2–2.7 cm; body whitish, straight to ± curved, 1.8–2.2 mm in diam., tuberculate, with 5 fairly well-differentiated ribs; beak 3–5 mm, stout, apically ± inflated; pappus disk ± tomentulose. Pappus slightly fulvous, 2.2–2.5 cm. Fl. and fr. Apr–Jun.

Mountain slopes, river valleys, sandy soils; 500–2000 m. Xinjiang [Kazakhstan, Kyrgyzstan].

13. Tragopogon marginifolius N. Pavlov, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 47(2): 83. 1938.

膜缘婆罗门参 mo yuan po luo men shen

Tragopogon gonocarpus S. A. Nikitin.

Herbs 20–35 cm tall, perennial. Caudex stout. Stem single, erect, simple or branched from middle third or higher, glabrous or tomentulose/floccose at nodes and below capitula. Basal and lower cauline leaves lanceolate to oblong, 10–30 × 0.5–2 cm, margin white, ± undulate and membranous. Capitula solitary to few; peduncle not inflated. Involucre 2.5–4 cm. Phyllaries 8, lanceolate, shorter than or equaling florets and achenes with pappus. Ligules purple to mauve. Outer achenes 2–2.5 cm; body whitish, straight to ± curved, 2–2.5 mm in diam., tuberculate, with 5 fairly well-differentiated ribs, abruptly contracted into beak; beak 5–10 mm, stout, apically ± inflated; pappus disk ± tomentulose. Pappus slightly fulvous, often with tinge of red, 2–2.5 cm. Fl. and fr. Apr–Jun. 2*n* = 12.

Stony slopes, sandy deserts; 800–1400 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia (E and S European parts), Uzbekistan].

14. Tragopogon elongatus S. A. Nikitin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 269. 1938.

长茎婆罗门参 chang jing po luo men shen

Herbs 15–35 cm tall, perennial. Caudex stout. Stem single, erect, simple or branched from middle or upper third, glabrous or tomentulose/floccose at nodes and below capitula. Basal and lower cauline leaves lanceolate, 10–20 × 4–8 cm, margin membranous and sometimes ± crisp. Capitula solitary to few; peduncle not inflated. Involucre 2–3 cm. Phyllaries 7 or 8, often darkly colored. Ligules purple to mauve. Outer achenes 1.8–2.2 cm; body whitish, straight to ± curved, 2–2.5 mm in diam., tuberculate, with 5 fairly well-differentiated ribs; beak 7–10 mm, stout, apically ± inflated; pappus disk ± tomentulose. Pappus slightly fulvous, 1.5–1.8 cm. Fl. and fr. Apr–Jun.

Mountain grasslands, stony deserts and semi-deserts; 500–1200 m. Qinghai, Xinjiang [Kazakhstan, Kyrgyzstan].

15. Tragopogon ruber S. G. Gmelin, Reise Russland 2: 198. 1774.

红花婆罗门参 hong hua po luo men shen

Tragopogon ruber var. *leucocarpus* C. H. An.

Herbs 15–35 cm tall, perennial. Caudex stout. Stem single, erect, simple or branched from middle third or above, glabrous or tomentulose/floccose at nodes and below capitula. Basal and lower cauline leaves lanceolate to oblong, 10–30 × 0.5–2 cm, margin white, ± undulate, and membranous. Capitula solitary to few; peduncle not inflated. Involucre 3.5–6 cm. Phyllaries 8, lanceolate, equaling or shorter than florets and achenes with pappus. Ligules purple to mauve. Outer achenes 2–2.5 cm; body whitish, straight to ± curved, 1.8–2.2 mm in diam., tuberculate, with 5 fairly well-differentiated ribs; beak 5–10 mm, stout, apically ± inflated; pappus disk ± tomentulose. Pappus slightly fulvous, often with tinge of red, 2–2.5 cm. Fl. and fr. Apr–Jun. $2n = 12$.

Mountains, sand dunes; 500–1500 m. Xinjiang [Kazakhstan, Russia (S European part)].

16. Tragopogon montanus S. A. Nikitin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 270. 1938.

山地婆罗门参 shan di po luo men shen

Herbs 15–35 cm tall, perennial. Caudex stout. Stem erect, branched from lower or middle third but sometimes simple, glabrous. Basal and lower cauline leaves lanceolate to oblong, 10–25 × 0.5–2 cm, margin white, ± undulate, and membranous. Capitula solitary to few; peduncle not inflated. Involucre 3–6 cm. Phyllaries 8, lanceolate, equaling or shorter than florets and achenes with pappus. Ligules purple to mauve. Outer achenes 2–2.5 cm; body whitish, straight to ± curved, 1.8–2.5 mm in diam., tuberculate, with 5 fairly well-differentiated ribs, gradually attenuate into beak; beak 5–10 mm, stout, apically ± inflated; pappus disk ± tomentulose. Pappus slightly fulvous, 2–2.5 cm. Fl. and fr. Apr–Jun. $2n = 12$.

Mountains; 1200–2500 m. Xinjiang [Kazakhstan, Kyrgyzstan, SC Russia, Tajikistan, Uzbekistan; SW Asia].

17. Tragopogon sibiricus Ganeschin, Trudy Bot. Muz. Imp. Akad. Nauk 13: 225. 1915.

西伯利亚婆罗门参 xi bo li ya po luo men shen

Herbs 0.5–1 m tall, biennial. Stem erect, simple or branched from middle third, glabrous. Basal and lower cauline leaves lanceolate to linear, 15–40 × 0.4–1 cm, margin flat. Capitula solitary to few; peduncle with dark hairs, ± inflated. Phyllaries 7 or 8, ca. 1/3 longer than florets and equaling achenes with pappus. Ligules violet. Outer achenes 1.8–2.4 cm; body smooth or subtuberculate on 5 fairly well-differentiated ribs; beak 0.6–1.4 cm, slender, ± inflated; pappus disk ± tomentulose. Pappus dirty white, 1.5–2 cm. Fl. and fr. Jun–Aug. $2n = 12$.

Forest margins; ca. 1700 m. Xinjiang [Russia (W Asian and E European parts)].

18. Tragopogon verrucosobracteatus C. H. An, Fl. Xinjiang. 5: 479. 1999.

瘤苞婆罗门参 liu bao po luo men shen

Herbs to 20 cm tall, perennial. Stem simple, densely covered with lanceolate or linear leaves, gradually decreasing in size toward apex. Capitulum solitary; peduncle mostly reduced, not inflated. Phyllaries 8(–10), lanceolate. Ligules yellow. Outer achenes 1.5–2 cm, beakless. Pappus dirty white, ca. 2 cm. Fl. and fr. Jun–Aug.

● Semi-deserts, stony places; ca. 500 m. Xinjiang.

Tragopogon verrucosobracteatus is poorly known and requires more investigation.

19. Tragopogon heteropappus C. H. An, Fl. Xinjiang. 5: 479. 1999.

长苞婆罗门参 chang bao po luo men shen

Herbs 30–50 cm tall, perennial. Stem simple. Basal and lower stem leaves lanceolate. Capitula solitary to few. Phyllaries 8(–10), lanceolate. Ligules yellow. Outer achenes 1–1.3 cm, almost beakless. Pappus short; awns clearly unequal, longest 2–5 ca. 7 mm, remainder ca. 4 mm. Fl. Jun.

● Semi-deserts, stony places; 1000–1300 m. Xinjiang.

Tragopogon heteropappus is poorly known and requires more investigation.

56. FABERIA Hemsley, J. Linn. Soc., Bot. 23: 479. 1888.

花佩菊属 hua pei ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Faberiopsis C. Shih & Y. L. Chen.

Herbs, perennial, often rosulate, with rhizomes. Stem leafy or ± leafless. Leaves lyrately pinnate or undivided, leathery. Capitula

with 5–30 florets. Involucre ± narrowly cylindric to ± narrowly campanulate. Phyllaries mostly glabrous; outer phyllaries in several series, gradually longer centripetally, often conspicuously imbricate, longest ca. 1/2 as long as inner ones; inner phyllaries 5–14, ± equal in length, ± linear-lanceolate to linear. Receptacle naked. Florets reddish to bluish purple. Achene brown to reddish brown, subcylindric to narrowly ellipsoid, rather weakly compressed, with 5 main ribs and 1 or 2 narrower ribs in between, apex truncate. Pappus brownish, single, of strong scabrid bristles.

● Seven species: China.

Systematic placement and circumscription of the genus have been revised based on molecular phylogenetic analyses of subtribes Lactucinae and Crepidinae (J. W. Zhang & N. Kilian, in prep.; N. Kilian et al., in prep.). N. Kilian et al. (in V. A. Funk et al., Syst. Evol. Biogeogr. Compositae, 348–350. 2009) placed *Faberia* in subtribe Crepidinae, but now ITS phylogenies show it on a very basal branch in subtribe Lactucinae. Recent additions to the genus by Sennikov (Komarovia 5: 109–110. 2008) are based on a different genus concept and are, as far as relevant for the flora of China, not supported. Karyological studies (Y. Liu, T. Deng & Q. E. Yang, pers. comm.) have revealed that the four species investigated have the unusual basic chromosome number of $x = 17$, perhaps indicating a hybrid origin of this genus.

Prenanthes glandulosa Dunn (J. Linn. Soc., Bot. 35: 514. 1903), which was initially placed by the first author in *Notoseris* (*N. glandulosa* (Dunn) C. Shih), is only known from the holotype at K, a piece of a flowering plant raised from seeds collected in "West China." It seems to be a distinct species, perhaps referable to *Faberia*, as may be assumed from the involucre (purplish, inner phyllaries ca. 6, outer ones linear as in *F. lancifolia*), the 10–12 blue (or purple?) florets, and the pale straw-colored pappus. The lower leaves have a broadly ovate blade with cordate base and a distinct, basally sheathlike widened and clasping petiole. The axes of the paniculiform to corymbiform synflorescence are densely glandular hairy, a feature otherwise not known from *Faberia*.

1a. Leaves lyrately pinnatifid to lyrately pinnatisect.
  2a. Leaves with terminal lobe much larger than lateral lobes, to 2/3 of entire leaf; involucre 1.4–1.5 cm; inner phyllaries usually 12–14; capitula with 20–30 florets ..... 3. *F. sinensis*
  2b. Leaves with terminal lobe never conspicuously larger than lateral lobes; involucre 1.1–1.3 cm; inner phyllaries ca. 8; capitula with 10–15 florets ..... 4. *F. ceterach*
1b. Leaf blade not divided or at most coarsely sinuate-dentate.
  3a. Leaf blade lanceolate to narrowly elliptic or oblanceolate, at least ca. 3 × as long as wide.
    4a. Capitula many in a leafless narrowly paniculiform synflorescence ..... 1. *F. lancifolia*
    4b. Capitula 1–3 on short branchlets subtended by upper stem leaves ..... 2. *F. nanchuanensis*
  3b. Leaf blade broadly elliptic, ovate, or pentagonal, mostly not more than ca. 2 × as long as wide.
    5a. Leaves on stem, with petiole usually shorter than blade; leaf blade triangular-ovate to pentagonal; capitula with 5 florets; inner phyllaries 5 ..... 7. *F. faberi*
    5b. Most leaves basal, with petiole distinctly longer than blade; leaf blade broadly elliptic to ovate; capitula with 10–20 florets; inner phyllaries at least 8.
      6a. Leaf blade mostly more than 5 cm; synflorescence corymbiform, with some capitula; florets bluish purple ..... 5. *F. cavaleriei*
      6b. Leaf blade at most ca. 4 cm; synflorescence sparsely branched, with 1–4 capitula only; florets purplish, drying yellowish ..... 6. *F. thibetica*

1. Faberia lancifolia J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 196. 1934.

披针叶花佩菊 pi zhen ye hua pei ju

Lactuca glabra C. C. Chang (1934), not Candolle (1838).

Herbs 30–70 cm tall, perennial. Rhizomes short, oblique, with many slender roots. Stem erect, ± branched from middle, sparsely hairy especially apically, leafy especially in basal portion. Basal leaves lanceolate and attenuate into a petiole-like basal portion to 1/3 of its length, 9–21 × 1–2.5 cm, base narrow, margin entire, apex acute to acuminate. Stem leaves usually 4 or 5, rather distant, similar to basal leaves but successively smaller; uppermost stem leaves reduced to linear-lanceolate bracts. Synflorescence narrowly paniculiform, with many capitula; branches wiry, spreading-erect, mostly 3–7 cm, with (1 or)2–6 capitula. Capitula with ca. 10 florets; peduncle 0.5–2 cm, conspicuously bracteate; bracts linear-lanceolate, 2–3 mm, spreading. Involucre purplish, 1–1.3 cm. Outer phyllaries linear-lanceolate, longest 5–6 mm; inner phyllaries ca. 6. Florets dark bluish purple. Achene pale brown, 3–4 mm. Pappus 5–6 mm. Fl. and fr. Aug–Sep.

● Crevices and ledges of cliffs by streams; 2100–2500 m. Yunnan (Tengchong).

Faberia lancifolia is a conspicuous but rare species, apparently only known from the type collection made in 1912.

2. Faberia nanchuanensis C. Shih, Acta Phytotax. Sin. 33: 195. 1995.

假花佩菊 jia hua pei ju

Faberiopsis nanchuanensis (C. Shih) C. Shih & Y. L. Chen.

Herbs 30–40 cm tall, perennial. Rhizomes short, horizontal. Roots long stretching. Stem solitary, dark purple, erect and weakly zigzag, slightly diverging at each node from perpendicular, weakly branched in apical portion, glabrous except for somewhat brown lanate leaf axils, distantly leafy. Basal leaves few to some; petiole ± purplish, 5–12 cm; leaf blade narrowly elliptic, 4–14 × 1–3 cm, base cuneate, margin inconspicuously mucronulately sinuate-dentate, apex acuminate. Stem leaves usually 5–7; petiole 1–9 cm, shorter upward; leaf blade narrowly elliptic to lanceolate but uppermost ones narrowly lan-

ceolate, otherwise like basal leaves, abaxially somewhat tinged purplish. Synflorescence of 1 to few short branchlets subtended by upper stem leaves, each with 1–3 capitula. Capitula with usually 15–20 florets. Involucre green and tinged purple, 1.1–1.3 cm. Phyllaries with apex obtuse to acute; outer phyllaries triangular-ovate to lanceolate, longest ca. 5 mm, margin ± ciliate; inner phyllaries usually 9–12, apically ciliate. Florets bluish purple. Achene not seen when mature. Pappus 7–8 mm. Fl. Jun–Aug. 2*n* = 34*.

● Wet places in ravines, on banks of pools and creeks; 600–700 m. Chongqing (Nanchuan).

C. Shih and Y. L. Chen (Acta Phytotax. Sin. 34: 439. 1996) described the ligule of the florets on the basis of the holotype as trisect with a larger 3-dentate middle segment and founded on this particularity the new genus *Faberiopsis*. Other collections of *Faberia nanchuanensis*, however, show the usual 5-dentate ligule of the Cichorieae, and both morphological and molecular data (J. W. Zhang et al., in prep.) corroborate its placement in *Faberia*. The species is morphologically closest to *F. lancifolia*.

3. Faberia sinensis Hemsley, J. Linn. Soc., Bot. 23: 479. 1888.

花佩菊 hua pei ju

Crepis hieracium H. Léveillé; *Faberia hieracium* (H. Léveillé) H. Léveillé; *Lactuca faberia* Franchet, nom. illeg. superfl.; *Prenanthes sinensis* (Hemsley) Stebbins ex Babcock (1947), not *P. chinensis* Thunberg (1784).

Herbs 40–90 cm tall, perennial, rosulate. Rhizomes short, oblique, with many slender roots. Stem erect, branched apically and sparsely brown hairy, usually leafless except for linear bracts subtending branches. Rosette leaves 7–50 × 3.5–8 cm, lyrately pinnatifid to lyrately pinnatisect, abaxially pale green and brown hairy, adaxially green and glabrous; lateral lobes few to many, opposite or alternate along petiole-like basal portion, semiorbicular, semielliptic, or triangular-ovate, to 1 × 2.5 cm, gradually smaller toward leaf base; terminal lobe elliptic, ovate, or lanceolate, 4–40 cm, base cordate, rounded, or subtruncate, margin sinuate to lyrately lobed and distantly shortly mucronulately dentate, apex acuminate. Synflorescence corymbiform, with few to some capitula. Capitula with usually 20–30 florets; peduncle 1–7 cm, slender. Involucre 1.4–1.5 cm. Phyllaries apically tinged purple, ciliate at margin with brownish hairs, otherwise glabrous or inner phyllaries also abaxially sparsely hairy near apex, apex ± acute; outer phyllaries triangular-ovate to lanceolate, longest 5–6 mm; inner phyllaries usually 12–14. Florets purplish to bluish. Achene reddish brown, 3.5–4.5 mm. Pappus 7–8 mm. Fl. and fr. Jun–Sep. 2*n* = 34*.

● Forest margins, forests, moist places under rocks; 600–3200 m. Sichuan, Yunnan.

The entire plant of *Faberia sinensis* is used medicinally for promoting semen production.

4. Faberia ceterach Beauverd, Bull. Soc. Bot. Genève 2: 51. 1910.

滇花佩菊 dian hua pei ju

Herbs 25–70 cm tall, perennial, rosulate, ?with rhizomes. Stem erect, basally brown hairy, apically branched and ± glabrous, leafless except for linear bracts subtending branches or with usually 1 or 2 leaves similar to rosette leaves. Rosette leaves narrowly elliptic to oblanceolate, 7–18 × 2–5 cm, lyrately pinnatipartite to lyrately pinnatisect, abaxially pale glaucous and brown hairy, adaxially dark green and glabrous, base cuneate to petiole-like for 1–3 cm, apex acute to acuminate; lateral lobes 7–15, semiorbicular to ovate, gradually smaller toward leaf base; terminal lobe lanceolate. Synflorescence narrowly paniculiform, with usually 10–20 capitula. Capitula with 10–15 florets. Involucre 1.1–1.3 cm. Phyllaries purplish red, abaxially glabrous; outer phyllaries triangular-ovate to lanceolate, longest 3–4 mm, apex acute; inner phyllaries ca. 8, apex obtuse. Florets purplish to bluish. Achene reddish brown, 3.5–4.5 mm. Pappus 6–7 mm. Fl. and fr. Jul.

● 2200–2600 m. Yunnan (Kunming).

Faberia ceterach seems only to be known from a few collections made in the early 20th century.

5. Faberia cavaleriei H. Léveillé, Bull. Géogr. Bot. 24: 252. 1914.

贵州花佩菊 gui zhou hua pei ju

Faberia tsiangii (C. C. Chang) C. Shih; *Hieracium tsiangii* C. C. Chang; *Prenanthes cavaleriei* (H. Léveillé) Stebbins ex Lauener.

Herbs 60–80 cm tall, perennial, rosulate, glabrous or sparsely hairy. Rhizomes with many slender roots. Stem erect, branched apically, sparsely leafy. Basal leaves rosulate; petiole 12–14 cm; leaf blade broadly elliptic to ovate, 9–14 × 4–6 cm, base cordate, truncate, or shortly cuneate, margin shallowly sinuate and distantly shortly mucronulately dentate, apex acute to acuminate. Stem leaves with petiole 1–3 cm; leaf blade lanceolate, smaller and narrower but otherwise similar to basal leaves, apex acuminate. Synflorescence corymbiform. Capitula with usually 10–20 florets, sessile or pedunculate; peduncle (when present) 2–5 cm, slender. Involucre 1.2–1.4 cm. Phyllaries purplish red, abaxially glabrous; outer phyllaries triangular-ovate to lanceolate, longest 0.5–0.7 mm, apex acute to obtuse; inner phyllaries 8, apex obtuse. Florets bluish purple. Achene reddish dark brown, 4–4.5 mm. Pappus 7–8 mm. Fl. and fr. Jun–Jul. 2*n* = 34*.

● Densely shaded woods; 900–1500 m. Guangxi (Ziyuan), Guizhou (Guiding).

Faberia cavaleriei is rare and only known from a few collections.

6. Faberia thibetica (Franchet) Beauverd, Bull. Soc. Bot. Genève 2: 50. 1910.

光滑花佩菊 guang hua hua pei ju

Lactuca thibetica Franchet, J. Bot. (Morot) 9: 293. 1895.

Herbs 15–35 cm tall, perennial, rosulate. Rhizomes with many slender roots. Stem erect, simple or sparsely branched, glabrous, not or very sparsely leafy. Basal leaves rosulate; petiole 4–11 cm; leaf blade triangular-ovate, 2–4 × 1–3 cm, base cordate or unequally cordate, margin shallowly to coarsely sinuate-dentate, or irregularly coarsely dentate, apex acute to acuminate. Stem leaves similar to basal leaves but with shorter

petiole and smaller narrower blade. Synflorescence sparsely branched, with 1–4 capitula. Capitula nodding at anthesis, with usually 15–25 florets. Involucre ca. 1.5 cm. Phyllaries abaxially glabrous; outer phyllaries triangular-ovate to linear-lanceolate, longest 1/2–2/3 as long as inner phyllaries, apex acute; inner phyllaries 10–12, apex subacute. Florets purplish, drying yellowish. Achene brown, ca. 5 mm. Pappus ca. 8 mm. Fl. and fr. Jul. $2n = 34$*.

● Grasslands on mountain slopes; ca. 2700 m. Sichuan (Kangding).

Faberia thibetica is rare and only known from a few collections.

7. Faberia faberi (Hemsley) N. Kilian, Z. H. Wang & J. W. Zhang, **comb. nov.**

狭锥花佩菊 xia zhui hua pei ju

Basionym: *Prenanthes faberi* Hemsley, J. Linn. Soc., Bot. 23: 486. 1888 [*"Faberii"*]; *Lactuca hemsleyi* Franchet, nom. illeg. superfl.; *P. vitifolia* Diels.

Herbs 1.2–2.5 m tall, perennial. Rhizomes horizontal, 1–2 cm in diam. Stem solitary, erect, ± glabrous, leafy, apically with or without branches as leafy as main stem. Stem leaves with petiole 2–6 cm; leaf blade triangular-ovate to pentagonal, 8–15 × 5–12 cm, glabrous or very sparsely with stiff hairs, base hastate to cordate, margin shallowly sinuately mucronately dentate and mucronulately denticulate, apex acute to acuminate; lower stem leaves rarely with a single pair of small, elliptic, entire, and subopposite to opposite lateral lobes. Synflorescences contracted paniculiform, with some to many capitula; branches short, wiry, often pilose. Capitula rather clustered, each with ca. 5 florets; peduncle 0–2 mm. Involucre ca. 10 × 3 mm. Phyllaries green, ± shortly white ciliate; outer phyllaries broadly ovate-triangular, longest 2.5–3(–5) mm, apex acute; inner phyllaries 5, apex obtuse. Florets pale purple. Achene brown, 3.5–4 mm. Pappus 6–8 mm. Fl. and fr. Jun–Aug.

● Mountain slopes, forest margins; 1800–3000 m. Chongqing, Guizhou, Sichuan, Yunnan.

Molecular phylogenetic analyses by N. Kilian et al. (in prep.) fully confirm the morphological affinity to *Faberia* of *F. faberi*, previously classified under *Prenanthes* (e.g., FRPS 80(1): 189. 1997).

The syntypes of *Prenanthes vitifolia*, collected by Rosthorn in Chongqing in 1891 and conserved at O with the annotation in Diels's hand "*Prenanthes vitifolia* Diels" on the printed label of O, are evidence that *P. vitifolia* is conspecific with *Faberia faberi*. The sheet at O with the collection number "470" on an original handwritten label is **designated here as the lectotype** of the name **Prenanthes vitifolia** Diels.

57. CICERBITA Wallroth, Sched. Crit. 433. 1822.

岩参属 yan shen shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Cephalorrhynchus Boissier; *Galathenium* Nuttall; *Mycelis* Cassini.

Herbs, perennial, often with rhizomes. Stem leafy. Leaves pinnate, lyrately pinnate, or undivided. Capitula with 5–20[–30] florets. Involucre narrowly to broadly cylindric or campanulate. Phyllaries glabrous [or abaxially appressed hairy]; outer phyllaries in several series, gradually longer centripetally, ± imbricate, longest ca. 1/2(–3/4) as long as inner ones; inner phyllaries 5–10, ± equal in length, ± linear-lanceolate to linear. Receptacle naked. Florets bluish or purplish, exceptionally white. Achene some shade of brown, subcylindric, ± ellipsoid, or ± fusiform, weakly to distinctly compressed, with 5 main ribs (2 lateral and sometimes strongly enlarged, 1 median ventrally, and 2 median dorsally), also with 0–2 slender ribs in between main ribs, apex truncate, attenuate, or beaked. Pappus white, single of slender scabrid bristles or double and with an additional outer row of short hairs.

Probably ca. 20–30 species: C and SW Asia, Europe; seven species (five endemic) in China.

The circumscription of *Cicerbita* has been heavily in debate since its creation. The genus is used here in a revised circumscription inferred from most recent molecular phylogenetic and morphological studies of the entire subtribe (N. Kilian et al., in prep.), but its circumscription is still not settled, in particular concerning the species of C and SW Asia. Its concept with respect to the taxa occurring in China is therefore tentative and aims at keeping the nomenclatural changes to a minimum. Molecular phylogenetic analyses by N. Kilian et al. (in prep.) revealed that *Chaetoseris* as treated in FRPS (80(1): 266–283. 1997) is diphyletic. Whereas the larger part of the genus, including *C. lyriformis* (= *Melanoseris beesiana*), which provides the type of the generic name, is nested in the genus *Melanoseris*, the smaller part forms a distant clade close to *Cicerbita* (generic name typified by *C. alpina* Wallroth). The latter clade includes *Chaetoseris* sect. *Roborovskia* Tzvelev (Rast. Tsentral. Azii 14b: 98. 2008) and *Cicerbita azurea*. We place this clade here tentatively in *Cicerbita*. We, moreover, follow Tzvelev (Bot. Zhurn. 92: 1756. 2007; Rast. Tsentral. Azii 14b: 100. 2008) in placing *Youngia* sect. *Cyanoglossa* S. W. Liu & T. N. Ho (originally with two species described by S. W. Liu & T. N. Ho, Acta Phytotax. Sin. 39: 553–556. 2001; further two species added by Tzvelev, loc. cit.: 2007) in close proximity to *Chaetoseris* sect. *Roborovskia*. It was so far not possible to study material of any of these species, as the material was not made available on loan to us. We place this group (*Chaetoseris* sect. *Cyanoglossa* (S. W. Liu & T. N. Ho) Tzvelev) tentatively in *Cicerbita*. Finally, we leave *Cicerbita thianschanica*, which has not been included so far in the aforementioned molecular phylogenetic studies, in *Cicerbita*.

1a. Plants robust, 0.6–1.5 m tall and synflorescence racemiform ..... 1. *C. thianschanica*
1b. Plants mostly rather delicate, mostly less than 0.6 m tall but sometimes to 0.9 m tall and then synflorescence paniculiform.
2a. Basal leaves and lower and middle stem leaves usually with triangular-ovate to orbicular leaf blade contracted into a well-developed long unwinged petiole; involucre 11–13 mm ..... 4. *C. azurea*
2b. Leaves not as above, or if basal leaves with triangular-ovate to orbicular leaf blade and well-developed petiole present then involucre ≤ 8 mm; involucre 6–10(–12) mm.

3a. Basal leaves at anthesis usually missing; stem throughout leafy with well-developed conspicuously auriculately to sagittately clasping leaves.
4a. Capitula with usually 10–12 florets; involucre (8–)9–10(–12) mm; inner phyllaries 8 ..... 2. *C. roborowskii*
4b. Capitula with ca. 5 florets; involucre 7–9 mm; inner phyllaries 5 ..... 3. *C. auriculiformis*
3b. Basal leaves at anthesis usually present; stem leaves few, reduced, undivided except for lowermost, and base not clasping.
5a. Involucre 9–10 mm; synflorescence divaricately branched; capitula with curved-erect peduncle ..... 7. *C. neglecta*
5b. Involucre 6–9 mm; synflorescence not divaricately branched; capitula with straight spreading-erect peduncle.
6a. Basal and stem leaves usually entire or more rarely few basal leaves with a few broadly triangular lobes; florets blue ..... 5. *C. zhenduoi*
6b. Basal and lowermost stem leaves runcinate; florets mauve ..... 6. *C. ladyginii*

1. Cicerbita thianschanica (Regel & Schmalhausen) Beauverd, Bull. Soc. Bot. Genève 2: 123. 1910.

天山岩参 tian shan yan shen

Mulgedium thianschanicum Regel & Schmalhausen, Trudy Imp. S.-Peterburgsk. Bot. Sada 6: 329. 1880.

Herbs 0.6–1.5 cm tall, perennial. Rhizomes thick, woody. Stem solitary, erect, branched from middle or apically. Basal and lower stem leaves with petiole 8–9 cm, winged, semi-amplexicaul; leaf blade oblanceolate, to 16[–50] × 7–8[–9] cm, lyrately pinnatipartite to lyrately pinnatisect, margin coarsely mucronulately dentate; lateral lobes 2 or 3 pairs, elliptic; terminal lobe larger than lateral lobes, triangular-hastate, to 9 × 8 cm, apex acute to acuminate. Middle stem leaves sessile, auriculately clasping, similar to lower stem leaves. Upper stem leaves lanceolate to narrowly elliptic, smaller, less or not divided. Synflorescence narrowly racemiform to 50 cm, with many capitula often clustered at nodes. Capitula with usually 10–20 florets; peduncle wiry, 1–3(–5) cm. Involucre broadly cylindric to campanulate, ca. 1.2 cm at anthesis, to 1.5 × 0.8 cm in fruit. Phyllaries glabrous or sparsely pubescent; outer phyllaries triangular-ovate to lanceolate, largest 7–9 × 1.5–2 mm; inner phyllaries ca. 8. Florets pale purple [to blue]. Achene brown, narrowly ellipsoid, ca. 5 mm, somewhat compressed, lateral ribs somewhat broadened, apex truncate. Pappus double, outer hairs 0.2–0.4 mm, bristles 6–7 mm. Fl. and fr. Jul–Sep. 2*n* = 18.

Mountain valleys, forests, along rivers; 1600–2000 m. Xinjiang [Kazakhstan, Tajikistan].

2. Cicerbita roborowskii (Maximowicz) Beauverd, Bull. Soc. Bot. Genève 2: 135. 1910.

川甘岩参 chuan gan yan shen

Lactuca roborowskii Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 29: 177. 1883; *Chaetoseris albiflora* Tzvelev; *C. potaninii* Tzvelev; *C. prattii* (Dunn) Tzvelev; *C. roborowskii* (Maximowicz) C. Shih; *L. prattii* Dunn.

Herbs 20–90 cm tall, perennial. Rhizomes very short. Stem solitary, erect, apically branched and glabrous or with white, stiff, subulate, and partly glandular hairs. Basal and lower leaves with winged clasping petiole to 10(–15) cm; leaf blade narrowly obovate to elliptic, 4.5–16 × 1.5–6 cm, pinnatipartite to pinnatisect or lyrately so, glabrous, margin entire or with few larger teeth; lateral lobes 2–7 pairs, lanceolate, elliptic, or linear, recurved, apex acute to obtuse; terminal lobe triangular-ovate, ovate-sagittate, linear, or lanceolate, apex acute to obtuse. Middle and upper stem leaves shortly petiolate or sessile; leaf blade elliptic to lanceolate, smaller, narrower, and less divided than lower leaves, base sagittately to auriculately clasping. Synflorescence paniculiform, with numerous capitula. Capitula with 10–12 florets. Involucre narrowly cylindric, (8–)9–10(–12) × 3–4 mm. Phyllaries glabrous or with subulate hairs, apex acute to obtuse; outer phyllaries triangular-ovate to linear-lanceolate, longest ca. 3/4 as long as inner phyllaries; inner phyllaries 8. Florets blue to purplish blue, rarely white. Achene 4–5 mm; body dark reddish to blackish brown, ellipsoid, compressed, with broad lateral ribs; beak greenish to brownish, 1–1.5 mm, slender. Pappus double, outer hairs ca. 0.2 mm, bristles ca. 7 mm. Fl. and fr. Jul–Sep.

● Thickets, grasslands; 1900–4200 m. Gansu, Ningxia, Qinghai, Sichuan, Xizang.

Chaetoseris albiflora, with white florets and strongly recurved leaf lobes, recently described from Xizang, hardly deserves recognition as a separate taxon and is here placed in the synonymy of *Cicerbita roborowskii*. Another recently described species from Xizang and based on a single 19th century collection, *Chaetoseris potaninii* is said to be closely related to *Cicerbita roborowskii* but to have a strongly reduced outer pappus and leaves with only 1–3 pairs of lateral lobes each with 1 or 2 large teeth. As the division of the leaves in *C. roborowskii* shows some variation, this feature, although conspicuous, does not preclude conspecificity of *Chaetoseris potaninii*, neither does the stated pappus feature. A closer inspection of the material is pending, but for the time being *C. potaninii* is included in *Cicerbita roborowskii*. As no discontinuity could be observed between plants having leaves with narrow (linear to linear-lanceolate or narrowly elliptic), ± entire lateral and terminal lobes on the one hand and those having leaves with wider (broadly lanceolate to ovate), 1- or 2-toothed lobes (originally described as *Lactuca prattii*) on the other hand, the inclusion of this latter species starting with Beauverd in 1910 is therefore maintained.

3. Cicerbita auriculiformis (C. Shih) N. Kilian, **comb. nov.**

抱茎岩参 bao jing yan shen

Basionym: *Stenoseris auriculiformis* C. Shih, Acta Phytotax. Sin. 33: 195. 1995; *Chaetoseris qiliangshanensis* S. W. Liu & T. N. Ho.

Herbs 45–80 cm tall, perennial. Stem solitary, erect, branched apically, glabrous. Lower stem leaves with petiole 6–11 cm, narrowly winged, ± clasping; leaf blade narrowly ovate, not divided or lyrately or non-lyrately pinnatisect; lateral lobes if present 1 or 2 pairs, obliquely ovate to oblong, recurved; terminal lobe 6.5–8.5 × 3.5–4.5 cm, base cordate, margin entire

or shallowly sinuate-dentate, apex acute to obtuse. Middle and upper stem leaves similar to lower leaves but with broadly winged, sagittately to auriculately clasping petiole-like basal portion or sessile; lateral lobes 2–4 pairs, ca. 3 × 0.7–1 cm; terminal lobe triangular-hastate to lanceolate. Synflorescence paniculiform, with numerous capitula. Capitula with ca. 5 florets. Involucre narrowly cylindric, 7–9 × ca. 2 mm. Phyllaries green, glabrous; outer phyllaries triangular-ovate to linear-lanceolate, longest ca. 1/2 as long as inner phyllaries; inner phyllaries 5. Florets bluish purple. Achene ca. 4 mm; body ellipsoid, compressed, with broad lateral ribs; beak ca. 1 mm and thick. Pappus double, outer hairs 0.1–0.2 mm, bristles ca. 5 mm. Fl. and fr. Jul–Aug.

● Mountain slopes, along rivers, forests; 2000–2300 m. Gansu (Yuzhong), W Nei Mongol, Qinghai.

Cicerbita auriculiformis is closely related to *C. roborowskii*, although well distinct by its smaller capitula with only 5 inner phyllaries. This relationship was clearly expressed by S. W. Liu and T. N. Ho (Fl. Qinghai. 3: 512. 1996) when publishing it under the name *Chaetoseris qiliangshanensis*. However, the species had been known before, but it was, for its small capitula, misplaced in *Stenoseris* as *S. auriculiformis* (e.g., FRPS 80(1): 286. 1997).

4. Cicerbita azurea (Ledebour) Beauverd, Bull. Soc. Bot. Genève 2: 123. 1910.

岩参 yan shen

Sonchus azureus Ledebour, Fl. Altaic. 4: 138. 1833; *Cicerbita azurea* var. *glabra* Sennikov; *C. glabra* (Sennikov) Tzvelev; *Lactuca azurea* (Ledebour) Danguy; *Mulgedium azureum* (Ledebour) Candolle.

Herbs 30–60 cm tall, perennial. Rhizomes horizontal to oblique. Stem solitary, erect, branched apically, ± with brownish glandular hairs or glabrous. Basal and lower stem leaves with petiole 4.5–5.5(–18) cm, narrowly winged or unwinged, base ± expanded and semiamplexicaul to clasping; leaf blade pinnatisect, abaxially sparsely villous but glabrescent, margin sinuate-dentate; lateral lobes 1 pair, elliptic-triangular to triangular; terminal lobe cordate, ovate, triangular-hastate, or rarely reniform, 2–8 × 1.5–6 cm, apex acuminate to rounded. Middle and upper stem leaves with winged petiole; leaf blade smaller, lateral lobes 1 pair or absent. Synflorescence racemiform to more rarely paniculiform, with few to many capitula. Capitula with usually 11–18 florets. Involucre cylindric, 1.1–1.3 × 0.4–0.6 mm. Phyllaries usually tinged deep violet, glandular hairy along midvein or glabrous; outer phyllaries lanceolate to linear-lanceolate, longest 6–9 mm; inner phyllaries 8–10, abaxially sparsely villous but glabrescent. Florets deep blue. Achene pale brown, narrowly ellipsoid, 4–5 mm, weakly compressed, constricted for ca. 0.2 mm below pappus disk. Pappus double, outer hairs inconspicuous and ca. 0.1 mm, bristles 6–8 mm. Fl. and fr. Jul–Oct.

Forest margins, mountain slopes, open areas in forests, grasslands on flats; 600–2900 m. N Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, SC Russia].

5. Cicerbita zhenduoi (S. W. Liu & T. N. Ho) N. Kilian, **comb. nov.**

振铎岩参 zhen duo yan shen

Basionym: *Youngia zhenduoi* S. W. Liu & T. N. Ho, Acta Phytotax. Sin. 39: 554. 2001; *Chaetoseris cyanea* (S. W. Liu & T. N. Ho) Tzvelev (2007), not (D. Don) C. Shih (1991); *C. zhenduoi* (S. W. Liu & T. N. Ho) Tzvelev; *Y. cyanea* S. W. Liu & T. N. Ho.

Herbs 15–30 cm tall, perennial, rosulate. Rhizomes short. Stem erect, branched from base or higher up, glabrous or white pubescent. Rosette leaves glabrous or pubescent, margin ± entire. Early leaves with distinct 1.3–3 cm petiole; leaf blade triangular-ovate, 1–1.8 × 0.6–0.8 cm, base sagittate, truncate, or cuneate, apex obtuse to acute. Leaf blade of later rosette leaves elliptic to lanceolate, 4–8.5 × 0.3–0.8 cm, undivided to rarely weakly pinnatifid with few triangular lobes, base gradually attenuate, apex acute to long acuminate. Stem leaves similar to later rosette leaves, narrowly ovate-elliptic to narrowly lanceolate; uppermost leaves bractlike. Synflorescence loosely racemiform or paniculiform, glabrous or pubescent, with few to some capitula. Capitula with usually 4–7 florets. Involucre narrowly cylindric, 6–8 × 1.5–2 mm. Phyllaries glabrous or pubescent; outer phyllaries ovate to lanceolate, longest ca. 4 × 1 mm, apex acute; inner phyllaries apically blackish purple, apex obtuse. Florets blue. Achene fusiform and apically attenuate, ca. 4 mm, somewhat compressed. Pappus 4–5 mm. Fl. and fr. Sep.

● Moist slopes, riverbanks; 3600–3700 m. Qinghai (Yushu).

We have not seen material of *Cicerbita zhenduoi*; therefore, its inclusion follows Tzvelev (Rast. Tsentral. Azii 14b: 100. 2008), and its description is taken from the original publication. We are not convinced that *Youngia cyanea*, described also from the environment of Jiangxigou, distinguished chiefly by the shape of the rosette leaves and the absence or presence of pubescence, represents a different species. From the variation experienced in the subtribe, the differences in either feature may well be within the usual range found. The corresponding combination under *Chaetoseris* provided by Tzvelev is illegitimate as a later homonym of *Chaetoseris cyanea* (D. Don) C. Shih, and the epithet is also not available in *Cicerbita*. Until closer study of the material, we prefer to treat both as conspecific.

6. Cicerbita ladyginii (Tzvelev) N. Kilian, **comb. nov.**

高原岩参 gao yuan yan shen

Basionym: *Chaetoseris ladyginii* Tzvelev, Bot. Zhurn. 92: 1756. 2007.

Herbs 20–50 cm tall, perennial. Stem solitary, erect, branched in apical half, glabrous. Basal leaves few, pinnatifid with lateral lobes broadly lanceolate to broadly triangular. Stem leaves 3–6, sessile, narrowly lanceolate to linear, undivided. Synflorescence glandular hairy. Involucre narrowly cylindric, 8–9 mm. Phyllaries almost glabrous, margin shortly ciliate; outer phyllaries with longest 3–4 mm. Florets mauve. Achene fusiform, not seen when mature. Pappus single, caducous. Fl. and fr. Jul–Aug.

● 4000–4100 m. Xizang.

We have not seen material of *Cicerbita ladyginii*; therefore, its description is taken from the original publication.

7. Cicerbita neglecta (Tzvelev) N. Kilian, **comb. nov.**

光苞岩参 guang bao yan shen

Basionym: *Chaetoseris neglecta* Tzvelev, Bot. Zhurn. 92: 1756. 2007.

Herbs 40–70 cm tall, perennial. Stem erect, branched from base or higher up. Basal leaves runcinately pinnate, with conspicuous terminal lobe. Lower stem leaves like basal leaves but others linear-lanceolate, undivided, base auriculately clasping, margin entire. Synflorescence divaricately paniculiform. Capitula with peduncle curved-erect, glandular hairy. Involucre narrowly cylindric, 9–10 mm. Phyllaries green, glabrous; outer phyllaries with longest 3–5 mm. Florets lilac. Achene 3.5–4 mm; body reddish brown, with thick lateral ribs; beak 0.7–1 mm. Pappus with outer hairs ca. 0.2 mm. Fl. and fr. Sep.

● 4000–4100 m. Xizang.

We have not seen material of *Cicerbita neglecta*; therefore, its description is taken from the original publication.

58. MELANOSERIS Decaisne in Jacquemont, Voy. Inde 4(Bot.): 101. 1843.

毛鳞菊属 mao lin ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Chaetoseris C. Shih; *Kovalevskiella* Kamelin; *Stenoseris* C. Shih.

Herbs, perennial, sometimes rosulate, rarely acaulescent, glabrous, glandular hairy, pilose, or hispid. Stems solitary or several, usually leafy. Leaves pinnate, lyrately pinnate, or undivided. Capitula often nodding, with 3–40 florets. Involucre narrowly cylindric to broadly campanulate. Phyllaries glabrous or with soft or rigid hairs; outer phyllaries mostly in several series, gradually longer centripetally, mostly to more than 1/2 as long as inner ones and often even ± approaching them in length, more rarely very short, absent in one species with a secondary capitulum (*Melanoseris souliei*); inner phyllaries 3 to many, ± equal in length, ± linear-lanceolate to linear. Receptacle naked. Florets bluish, purplish, sometimes yellow, or rarely white. Achene some shade of brown, mostly ellipsoid and strongly compressed, more rarely subcylindric to ± fusiform and weakly compressed, with (4 or)5 main ribs (2 mostly strongly broadened lateral, 1 median ventrally, and (1 or)2 median dorsally) and with 0–2 slender ribs in between main ribs, apex truncate, attenuate, or with a stout beak. Pappus white or rarely yellowish, single of slender scabrid bristles or more frequently double and with an additional outer row of minute hairs.

Probably ca. 60–80 species: Africa, Asia, Himalayan region; 25 species (16 endemic) in China; one additional species (endemic) is tentatively placed with *Melanoseris*.

The generic name *Melanoseris*, based on *M. lessertiana*, is one of the oldest in subtribe Lactucinae but has never found recognition. Molecular phylogenetic analyses of subtribe Lactucinae (N. Kilian et al., in prep.) revealed, however, that the bulk of *Chaetoseris*, including the type of the name, the genus *Stenoseris*, and a number of species formerly placed in *Cicerbita*, *Lactuca*, *Mulgedium*, and *Prenanthes*, are all members of a sizable *Melanoseris* clade. The genus chiefly seems to represent the important branch in the evolution of subtribe Lactucinae that successfully colonized subtropical and drier tropical regions.

1a. Plants rosulate and acaulescent; capitula sessile, densely congested in a secondary capitulum; phyllaries only in 1 row ..... 25. *M. souliei*
1b. Plants neither rosulate nor acaulescent; capitula without secondary capitula; phyllaries in 2 or more rows.
2a. Capitula with 3–9 florets; inner phyllaries 3–5(or 6).
3a. Involucre 1.5–1.8 mm; capitula with 7–9 florets; plants, including involucre, strongly hirsute with pale hairs ..... 7. *M. hirsuta*
3b. Involucre 0.9–1.4(–1.6) mm; capitula with 3–6 florets; plants, including involucre, glabrous or ± hairy, but never strongly hirsute with pale hairs.
4a. Involucre 1.3–1.6 mm; inner phyllaries 4; achene 9–11 mm including a slender 3–4 mm beak ..... 10. *M. henryi*
4b. Involucre 0.9–1.4(–1.5) mm; inner phyllaries 3–5(or 6); achene 4–7 mm and unbeaked or with less than 2 mm beak.
5a. Outer phyllaries with longest 4–5 mm; inner phyllaries 5(or 6); florets 4–6 ..... 23. *M. violifolia*
5b. Outer phyllaries with longest ≤ 3 mm; inner phyllaries 3–5; florets 3–5.
6a. Leaf blade of all leaves not divided.
7a. Involucre with 3 or 4 inner phyllaries; capitula with 3 or 4 bluish purple florets; anther tube ca. 2 mm ..... 16. *M. tenuis*
7b. Involucre with 4 or 5 inner phyllaries; phyllaries with reddish hairs; capitula with 4 or 5 yellow florets; anther tube ca. 4 mm ..... 26. *Lactuca scandens*
6b. Leaf blade of at least lower and middle leaves pinnatisect or lyrately pinnatisect.
8a. Involucre 1.2–1.5 cm at anthesis and in fruit; outer phyllaries with longest to 3 mm; achene 6–7 mm ..... 18. *M. graciliflora*
8b. Involucre 0.9–1.1 cm at anthesis and in fruit; outer phyllaries with longest to 2 mm; achene 4–5 mm.
9a. Achene unbeaked ..... 20. *M. oligolepis*
9b. Achene contracted into a distinct stout beak of 0.5–1 mm.

10a. Rachis of leaves usually pectinate; leaf blade terminal lobe ovate to ovate-lanceolate, base truncate, shallowly cordate, or broadly cuneate ..... 17. *M. triflora*
10b. Rachis of leaves not pectinate; leaf blade terminal lobe elliptic to lanceolate, base cuneate ..... 19. *M. leptantha*

2b. Capitula with 10 or more florets; inner phyllaries at least (7 or)8.
11a. Peduncle bracts regularly conspicuous, usually purplish red when dry, lanceolate, to 1.5 cm, ± semiamplexicaul ..... 24. *M. bracteata*
11b. Peduncle without or with inconspicuous bracts.
12a. Outer phyllaries with white densely fimbriate margin.
13a. Capitula with ca. 40 florets; involucre conspicuously thick and large, 1.8–2.3 × 1–1.5 cm ..... 3. *M. macrantha*
13b. Capitula with ca. 15 florets; involucre only ca. 1.5 × 0.8 cm ..... 4. *M. ciliata*
12b. Outer phyllaries with glabrous margin.
14a. Florets yellow (cyanic florets sometimes drying yellowish, corolla teeth then keeping original color).
15a. Leaves pinnately lobed, lobes narrowly elliptic, elliptic, or lanceolate; involucre 1.1–1.5 mm ..... 1. *M. yunnanensis*
15b. Leaves pinnately lobed, lobes rhombic to irregularly rhombic; involucre 9–10 mm ..... 2. *M. rhombiformis*
14b. Florets purple, purplish red, blue, or exceptionally white.
16a. Plants 5–50 cm tall; stems either several, weak, and sparsely branched or with solitary dominant stem branched from base or else stem delicate.
17a. Plants 5–30 cm tall; capitula with usually 12–24 florets; involucre to 10 mm in diam. in fruit; branches, peduncles, and involucres often reddish villous; pappus without a row of minute outer hairs ..... 21. *M. lessertiana*
17b. Plants 20–50 cm tall; capitula with usually 10–15 florets; involucre ≤ 5 mm in diam. in fruit; branches, peduncles, and involucres never reddish villous; pappus with a row of minute outer hairs ..... 22. *M. macrorhiza*
16b. Plants taller; stem strong, with dominant main stem apically branched.
18a. Lower and middle stem leaves gradually attenuate into a petiole or petiole-like basal portion, at least middle stem leaves with blade usually clasping stem; blade shape not as below.
19a. Involucre at fruiting 1–1.5 cm wide; capitula with usually 25–35 florets ..... 12. *M. atropurpurea*
19b. Involucre at fruiting less than 1 cm wide; capitula with usually 10–16 florets.
20a. Capitula with ca. 10 florets ..... 14. *M. likiangensis*
20b. Capitula with 12–16 florets.
21a. Involucre 1.7–2 cm; leaf blade lateral lobes 1 or 2 pairs ..... 13. *M. leiolepis*
21b. Involucre ca. 1.5 cm; leaf blade lateral lobes 5–7 pairs ..... 15. *M. pectiniformis*
18b. Lower and middle stem leaves abruptly contracted from a basally broad blade into a narrowly winged petiole; leaf blade undivided and triangular-ovate to broadly lanceolate or pinnately lobed with 1–3 pairs of elliptic to lanceolate lateral lobes.
22a. Lower and middle stem leaves with 2 or 3 pairs of lateral lobes; leaf blade terminal lobe usually much narrower than blade.
23a. Involucre ca. 1.5 cm in fruit; capitula with usually 15–20 florets ..... 8. *M. sichuanensis*
23b. Involucre ca. 2 cm in fruit; capitula with ca. 30 florets ..... 9. *M. taliensis*
22b. Lower and middle stem leaves undivided or with 1 or 2 pairs of lateral lobes; leaf blade terminal lobe at least in some leaves as wide or almost as wide as blade.
24a. Involucre 1.7–2.1 cm; capitula with ca. 40 florets ..... 11. *M. macrocephala*
24b. Involucre 1.2–1.7 cm; capitula with usually 15–30 florets.
25a. Lower and middle stem leaves undivided or single leaves with 1 pair of elliptic lateral lobes; involucre 1.3–1.7 cm ..... 5. *M. cyanea*
25b. Lower and middle stem leaves with 1 or 2 pairs of elliptic lateral lobes; involucre 1.2–1.5 cm ..... 6. *M. beesiana*

1. Melanoseris yunnanensis (C. Shih) N. Kilian & Z. H. Wang, **comb. nov.**

云南毛鳞菊 yun nan mao lin ju

Basionym: *Chaetoseris yunnanensis* C. Shih, Acta Phytotax. Sin. 29: 410. 1991; *C. lutea* (Handel-Mazzetti) C. Shih; *C. teniana* (Beauverd) C. Shih; *Cicerbita cyanea* (D. Don) Beauverd var. *lutea* Handel-Mazzetti; *C. cyanea* var. *teniana* Beauverd.

Herbs ca. 1 m tall or more, perennial. Root slenderly turniplike. Stem solitary, erect, apically branched and glandular hairy. Lower and middle stem leaves with petiole 3–10 cm, narrowly winged, not clasping; leaf blade elliptic to ovate, 10–15 × 4–9 cm, pinnatipartite or pinnatisect to bipinnately lobed, pilose and hispid glandular hairy, margin dentate; lateral lobes 2–6 pairs, opposite or alternate, elliptic to lanceolate, apex acute; secondary lobes if present 1 or 2 pairs, broadly triangular to lanceolate; terminal lobe elliptic to lanceolate. Upper stem leaves similar to middle stem leaves but petiole shorter; leaf blade smaller and less divided; uppermost leaves linear-lanceolate, undivided. Synflorescence racemiform to narrowly paniculiform, with few to many capitula. Capitula nodding, with usually 15–20 florets; peduncle wiry, 0.2–2(–5) cm. Involucre purplish green, cylindric, 1.1–1.5 × 0.4–0.8 cm. Phyllaries ± acute at apex; outer phyllaries triangular-ovate to linear-lanceolate, glabrous or abaxially hispid on midvein, longest approaching inner phyllaries in length. Florets yellow to whitish. Achene ca. 7 mm; body dark reddish brown, ellipsoid, compressed, lateral ribs broadened, apex contracted into a ca. 2 mm paler beak. Pappus double, outer hairs 0.1–0.2 mm, bristles 7–8 mm. Fl. and fr. Sep–Oct.

● Grasslands on mountain slopes, river valleys, forests; 700–3400 m. Sichuan, Yunnan.

Melanoseris yunnanensis and *Chaetoseris lutea* show many transitions between each other and actually seem to be conspecific. According to the fragmentary type material of *Cicerbita cyanea* var. *teniana* preserved at G (the type material in herb. Bonati, formerly at LA, is presumably lost), it represents a strongly glandular form of *M. yunnanensis*.

2. Melanoseris rhombiformis (C. Shih) N. Kilian & Z. H. Wang, **comb. nov.**

菱裂毛鳞菊 ling lie mao lin ju

Basionym: *Chaetoseris rhombiformis* C. Shih, Acta Phytotax. Sin. 29: 409. 1991.

Herbs 60–70 cm tall, perennial. Stem solitary, erect, apically with slender glabrous branches. Lower stem leaves with petiole 3–5 cm, basally widened; leaf blade narrowly elliptic, 14–17 × 5–8 cm, pinnatipartite, margin dentate; lateral lobes 6–9 pairs, ± rhombic to rarely triangularly hastate, base broadly petiolulate or sessile, apex acuminate; terminal lobe rhombic, hastate-rhombic, or triangular-hastate-rhombic, apex acute. Middle stem leaves similar to lower stem leaves but with fewer lateral lobes. Upper stem leaves similar to middle stem leaves but broadly triangular to broadly ovate, base broadly winged, petiole-like, and auriculately clasping, margin entire; lateral lobes 2 pairs, irregularly triangular-hastate, basally attenuate; terminal lobe irregularly triangular-hastate. Synflorescence paniculiform, with numerous capitula. Capitula ?nodding, with ca. 10 florets. Involucre cylindric, 8–10 × ca. 3 mm. Phyllaries abaxially glabrous, apex acute to obtuse; outer phyllaries narrowly triangular to linear-lanceolate. Florets yellow. Achene 4–5 mm; body dark brown, ellipsoid, compressed, lateral ribs broadened, apex contracted into a ca. 1 mm beak. Pappus double, outer hairs inconspicuous, bristles ca. 4 mm. Fl. and fr. Sep–Oct.

● Thickets; ca. 2500 m. Yunnan (Eryuan).

3. Melanoseris macrantha (C. B. Clarke) N. Kilian & J. W. Zhang, **comb. nov.**

缘毛毛鳞菊 yuan mao mao lin ju

Basionym: *Lactuca macrantha* C. B. Clarke, Compos. Ind. 267. 1876; *Chaetoseris macrantha* (C. B. Clarke) C. Shih; *Cicerbita macrantha* (C. B. Clarke) Beauverd.

Herbs 0.5–1.5 m tall, perennial. Stem stout, erect, apically branched and glandular hairy. Lower and middle stem leaves with petiole long (lowermost leaves) to sessile with an expanded and clasping base; leaf blade narrowly spatulate, elliptic, or narrowly lanceolate, 14–40(or more) × 4–8 cm, pinnatipartite to pinnatisect (in lowermost leaves); lateral lobes 2–5 pairs but to 8-paired in lowermost leaves, abaxially glabrous, margin coarsely dentate, apex acute; terminal lobe narrowly triangular, narrowly ovate, or irregular rhombic, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but smaller and less divided. Synflorescence racemiform to corymbosely paniculiform, lax, with few capitula. Capitula with ca. 40 florets; peduncle (2–)5–14 cm. Involucre dark purplish green, broadly campanulate, 1.8–2.3 × 1–1.5 cm. Phyllaries with apex acute to obtuse; outer phyllaries ovate to lanceolate, margin white densely fimbriate; inner phyllaries without a fimbriate margin. Florets blue to bluish purple. Achene 6–7 mm; body brown, ellipsoid, compressed, lateral ribs broadened, apex tapering into a barely differentiated thick beak of 1–2 mm. Pappus double, outer hairs 0.1–0.2 mm, bristles ca. 8 mm. Fl. and fr. Jul–Sep. 2*n* = 16.

Forests, thickets; 3200–4100 m. Xizang [Bhutan, N India, Nepal].

4. Melanoseris ciliata (C. Shih) N. Kilian, **comb. nov.**

景东毛鳞菊 jing dong mao lin ju

Basionym: *Chaetoseris ciliata* C. Shih, Acta Phytotax. Sin. 29: 403. 1991.

Herbs ca. 50 cm tall. Stem erect, apically branched and sparsely glandular hairy. Lower and middle stem leaves with petiole 3–5.5 cm, narrowly winged, basally widened and auriculately clasping; leaf blade lyrately pinnatisect, abaxially or both surfaces with squarrose hairs on veins; lateral lobes 1 pair, elliptic, apex acute to obtuse; terminal lobe triangular, 6–8 × 3–4 cm, base truncate, apex acute. Upper stem leaves similar to middle stem leaves but smaller; uppermost stem leaves sessile, lanceolate to linear-lanceolate, undivided. Synflorescence racemiform, with few capitula. Capitula with ca. 15 florets. Involucre broadly cylindric to campanulate, ca. 1.5 × 0.8 cm. Phyllaries dark green, abaxially glabrous, apex acute to obtuse;

outer phyllaries broadly triangular to linear-lanceolate, margin white fimbriate. Florets bluish. Achene beaked but only immature ones seen. Pappus ?single, bristles ca. 6 mm. Fl. Nov.

● Mountain slopes; 2800–2900 m. Yunnan (Jingdong).

Melanoseris ciliata is a little-known species in need of closer examination on the basis of additional material with mature achenes.

5. Melanoseris cyanea (D. Don) Edgeworth, Trans. Linn. Soc. London 20: 81. 1846.

蓝花毛鳞菊 lan hua mao lin ju

Sonchus cyaneus D. Don, Prodr. Fl. Nepal. 164. 1825; *Chaetoseris cyanea* (D. Don) C. Shih; *C. hastata* (Candolle) C. Shih; *C. hispida* C. Shih; *Cicerbita cyanea* (D. Don) Beauverd; *C. cyanea* var. *glandulifera* (Franchet) Beauverd; *C. cyanea* var. *hastata* (Candolle) Beauverd; *Lactuca funebris* W. W. Smith; *L. hastata* Candolle; *L. hastata* var. *glandulifera* Franchet; *Melanoseris hastata* (Candolle) Edgeworth; *Mulgedium cyaneum* (D. Don) Candolle.

Herbs 0.8–1.8 m tall, perennial. Root slenderly turniplike. Stem solitary, erect, branched apically, ± glabrous to densely covered with purplish to brownish glandular hairs. Lower and middle stem leaves with petiole to 12 cm, narrowly winged, not or rarely very faintly sagittately clasping; leaf blade ovate to triangular, 5–11 × 3.5–8.5 cm, undivided or with 1 pair of ± elliptic lateral lobes, margin coarsely dentate, base of blade or terminal lobe cuneate, truncate, cordate, or hastate, apex acute. Upper stem leaves shortly petiolate to sessile; leaf blade similar to middle stem leaves but smaller, narrowly elliptic, undivided to shallowly pinnatifid. Synflorescence paniculiform, often with rather long virgate branches, with several to numerous capitula. Capitula with usually 20–30 florets. Involucre cylindric, 1.3–1.7 × 0.5–0.8 cm. Phyllaries with midvein white or purplish hispid except in innermost ones, apex acute; outer phyllaries triangular-ovate to lanceolate. Florets blue to purplish. Achene 7–8 mm; body dark brown, ellipsoid, compressed, lateral ribs broadened, apex attenuate into a pale 2–3 mm slender beak. Pappus double, outer hairs 0.1–0.3 mm, bristles ca. 7 mm. Fl. and fr. Sep–Nov. 2*n* = 16*.

Moist places under forests, thickets in mountain valleys, forest margins, grassy slopes, wastelands on mountain slopes; 1500–3100 m. Chongqing, Guizhou, Sichuan, Xizang, Yunnan [Bhutan, N India, Kashmir, Myanmar, Nepal].

Plants with less glandular hairy to almost glabrous branches, as they occur in various species besides strongly glandular plants, were originally described as *Lactuca hastata* and recognized as *Chaetoseris hastata* in FRPS (80(1): 275. 1997) but have been considered as conspecific with *C. cyanea* by most authors, a treatment which is also followed here. Plants from Chongqing earlier described as a separate species, *C. hispida*, were later recognized by its author as conspecific with *C. cyanea*, and the name was sunk in the synonymy of that species.

6. Melanoseris beesiana (Diels) N. Kilian, **comb. nov.**

毛鳞菊 mao lin ju

Basionym: *Lactuca beesiana* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 201. 1912; *Chaetoseris beesiana* (Diels) C. Shih; *C. lyriformis* C. Shih.

Herbs ca. 1 m tall, perennial. Stem solitary, erect, apically branched and glandular hairy. Lower and middle stem leaves with petiole 3–7 cm, ± winged, basally semiamplexicaul; leaf blade 7–17 × 4–13 cm, lyrately pinnatisect, abaxially glandular hairy, base cuneate, margin dentate; lateral lobes 1 or 2 pairs, ± elliptic; terminal lobe broadly triangular-hastate, ovate, or triangular, comprising most of blade, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but smaller; uppermost leaves sessile, linear-lanceolate to elliptic, not divided. Synflorescence narrowly racemiform or paniculiform, with few to several capitula. Capitula with usually 15–25 florets; peduncle 0.5–3 cm. Involucre cylindric to narrowly campanulate, 1.2–1.5 × 0.4–0.7 cm. Phyllaries dark green, abaxially densely glandular hispid, apex acute to obtuse; outer phyllaries narrowly triangular to lanceolate. Florets purple. Achene ca. 5 mm; body dark brown, broadly ellipsoid, compressed, lateral ribs broadened, apex attenuate into a pale 1–2 mm beak. Pappus double, outer hairs ca. 0.1 mm, bristles ca. 7 mm. Fl. and fr. Aug–Oct. 2*n* = 16*.

● Forests, wastelands, farmlands; 700–3700 m. Sichuan, Xizang, Yunnan.

Melanoseris beesiana was established by C. Shih (Acta Phytotax. Sin. 29: 405. 1991) as *Chaetoseris lyriformis* (providing the type of the generic name *Chaetoseris*), but *Lactuca beesiana* provides an older epithet. It is, no doubt, closely related to the more widespread *M. cyanea* and mainly distinguished from the latter by its regularly lyrately pinnatisect lower and middle stem leaves and somewhat smaller involucres. With some reservation, species rank is maintained for this taxon, but future research may reveal that subspecies rank is perhaps more appropriate.

7. Melanoseris hirsuta (C. Shih) N. Kilian, **comb. nov.**

鹤庆毛鳞菊 he qing mao lin ju

Basionym: *Chaetoseris hirsuta* C. Shih in Y. Ling & C. Shih, Fl. Reipubl. Popularis Sin. 80(1): 282. 1997, based on *Lactuca hirsuta* Franchet, J. Bot. (Morot) 9: 258. 1895, not *Lactuca hirsuta* Muhlenberg ex Nuttall, Gen. N. Amer. Pl. 2: 124. 1818.

Herbs 15–30 cm tall, perennial, with a taproot ?and shoot-bearing lateral roots, strongly hirsute of pale partly glandular hairs. Stem solitary, erect, leafy. Lower and middle stem leaves oblanceolate to obovoid in outline, ca. 12 × 5 cm, lyrately pinnatisect, basally abruptly contracted into a ± winged petiole-like portion, base semiamplexicaul to weakly clasping, margin densely and sharply sinuate-dentate and denticulate; lateral lobes 1 or 2 pairs, triangular to rhombic, apex acute to obtuse; terminal lobe broadly ovate to broadly triangular, very much larger than lateral lobes, base cordate, apex acute. Upper stem leaves ovate to lanceolate, smaller, ± without petiole-like basal portion, otherwise similar to middle stem leaves. Synflorescence narrowly paniculiform, leafy, with few to some capitula. Capitula nodding, with ca. 8 florets; peduncle less than 1 cm. Involucre cylindric, 1.5–1.8 cm. Phyllaries abaxially hirsute as remainder of plant; outer phyllaries few, ± inconspicuous; inner phyllaries 5. Florets yellowish. Achene brown, narrowly ellipsoid, ca. 1 cm, subcompressed, apex attenuate into a short stout beak. Pappus single, yellowish, ca. 7 mm, caducous. Fl. and fr. Aug–Oct.

● Meadows, below rocks, alongside paths; 1700–3300 m. Sichuan, Yunnan (Dali).

A well-delimited yet little-known species, this taxon is placed here with some hesitation.

8. Melanoseris sichuanensis (C. Shih) N. Kilian, **comb. nov.**

四川毛鳞菊 si chuan mao lin ju

Basionym: *Chaetoseris sichuanensis* C. Shih, Acta Phytotax. Sin. 29: 408. 1991.

Herbs ca. 80 cm tall, perennial. Stem solitary, erect, apically branched and sparsely glandular hairy. Middle stem leaves with petiole 2.5–4 cm, very narrowly winged; leaf blade ovate to elliptic, 9–11 × 6–7 cm, pinnatisect to subpinnatisect, base ± truncate, margin dentate; lateral lobes 2 or 3 pairs, lanceolate, apex acute, acuminate, or obtuse; upper and middle lobes 2–4.5 × 1–1.5 cm; lower lobes smaller; terminal lobe elliptic-lanceolate, ca. 4 × 1.5 cm. Upper stem leaves similar to middle stem leaves but smaller; uppermost leaves linear. Synflorescence narrowly paniculiform, with numerous capitula. Capitula with usually 15–20 florets. Involucre cylindric to campanulate, ca. 1.5 × 0.5 cm. Phyllaries with an obtuse to acute apex; outer phyllaries lanceolate, hispid. Florets purplish. Achene ca. 6 mm; body pale brown, ellipsoid, compressed, lateral ribs broadened, apex contracted into a ca. 2 mm beak. Pappus double, outer hairs inconspicuous, bristles ca. 8 mm. Fl. and fr. Aug–Oct.

● Mountain slopes; 2700–3700 m. Sichuan (Mianning), Yunnan.

9. Melanoseris taliensis (C. Shih) N. Kilian & Z. H. Wang, **comb. nov.**

戟裂毛鳞菊 ji lie mao lin ju

Basionym: *Chaetoseris taliensis* C. Shih, Acta Phytotax. Sin. 29: 402. 1991.

Herbs ca. 50 cm tall, perennial. Rhizomes tuberlike. Stem solitary, erect, apically branched and glandular hairy. Lower and middle stem leaves with petiole 4–5 cm, winged, basally broadened and clasping; leaf blade narrowly ovate, 10–15 × ca. 6 cm, runcinately pinnatipartite to subpinnatisect, margin dentate, apex acute to obtuse; lateral lobes 2 or 3 pairs, elliptic to irregularly rhombic, increasing in size toward leaf apex; terminal lobe lanceolate, irregularly rhombic, or falcate, much narrower than lateral lobes, with few small semiorbicular lobes. Upper stem leaves similar to lower and middle stem leaves but smaller; uppermost leaves linear-lanceolate, undivided. Synflorescence racemiform to sparsely paniculiform, with few capitula. Capitula with ca. 30 florets. Involucre campanulate, ca. 2 × 1 cm. Phyllaries glabrous, apex acute to obtuse; outer phyllaries triangular-lanceolate. Achene 8–9 mm; body dull brown, narrowly ellipsoid, compressed, lateral ribs broadened, apex tapering into a paler 2–3 mm beak. Pappus double, outer hairs ca. 0.1 mm, bristles ca. 7 mm. Fl. and fr. Oct. 2*n* = 16*.

● Mountaintops; 2800–3000 m. Yunnan (Dali, Lijiang).

10. Melanoseris henryi (Dunn) N. Kilian, **comb. nov.**

普洱毛鳞菊 pu er mao lin ju

Basionym: *Lactuca henryi* Dunn, J. Linn. Soc., Bot. 35: 512. 1903.

Herbs to 1 m tall, perennial. Stem solitary, erect, apically branched, glabrous, leafy. Lower stem leaves not seen. Middle stem leaves spatulate, to 12 × 3 cm, pinnatifid to pinnatipartite, somewhat setose, base attenuate, margin sinuate-dentate, apex obtuse to acute; lateral lobes 1 or 2 pairs, semiorbicular to broadly ovate; terminal lobe ovate to lanceolate, as wide as lateral lobes. Upper stem leaves similar to middle stem leaves but smaller and less divided, apex acute to acuminate; uppermost stem leaves narrowly elliptic, undivided. Synflorescence paniculiform with some to many capitula. Capitula with 4 or 5? florets; peduncle wiry, sparsely setose. Involucre narrowly cylindric, 1.3–1.6 × ca. 0.3 cm. Phyllaries glabrous, apex obtuse; outer phyllaries lanceolate to linear-lanceolate, longest ca. 1/2 as long as inner ones; inner phyllaries 4. Florets ?purplish. Achene 0.9–1.1 cm; body reddish, narrowly ellipsoid, compressed, apex tapering into a paler 3–4 mm beak. Pappus ca. ?7 mm.

● About 1500 m. Yunnan (Pu'er).

Lactuca henryi, based on the collection *A. Henry 13494*, was omitted from FRPS and by X. Zhuang (Fl. Yunnan. 13. 2004), but, as confirmed by the electronic image of an isotype at NY, it represents a species well characterized by its slender involucres and long-beaked achene. It can fairly safely be assigned to *Melanoseris*.

11. Melanoseris macrocephala (C. Shih) N. Kilian & J. W. Zhang, **comb. nov.**

大头毛鳞菊 da tou mao lin ju

Basionym: *Chaetoseris macrocephala* C. Shih, Acta Phytotax. Sin. 29: 404. 1991.

Herbs 50–100 cm tall, perennial. Stem solitary, erect, apically branched and glandular hairy. Lower and middle stem leaves with petiole 5–10 cm, narrowly winged; leaf blade ovate to ± broadly lanceolate, 10–14 × 5–6 cm, undivided or pinnatisect, abaxially sparsely glandular hairy, base ± truncate, margin dentate, apex acute to acuminate; lateral lobes (0 or)1 or 2 pairs, elliptic, apex obtuse to acute; terminal lobe ovate to broadly lanceolate, often hastate and comprising most of blade, apex acute to acuminate. Upper stem leaves with shorter petiole and smaller, otherwise similar to middle stem leaves; uppermost stem leaves sessile, lanceolate, base cuneate, apex acuminate. Synflorescence racemiform or paniculiform, with few to several capitula. Capitula with ca. 40 florets; peduncle 1–5 cm. Involucre broadly campanulate, 1.7–2.1 × ca. 1 cm. Phyllaries glandular hispid, apex acute; outer phyllaries triangular to lanceolate. Florets purplish red. Achene ca. 5 mm; body dark brown, ellipsoid, compressed, lateral ribs broadened, apex attenuate into a pale 1–2 mm beak. Pappus double, outer hairs 0.1–0.2 mm, bristles ca. 7 mm. Fl. and fr. Aug–Sep.

● Forest margins, thickets, grasslands; 2000–3500 m. Xizang (Nyalam).

12. Melanoseris atropurpurea (Franchet) N. Kilian & Z. H. Wang, **comb. nov.**

大花毛鳞菊 da hua mao lin ju

Basionym: *Lactuca atropurpurea* Franchet, J. Bot. (Morot) 9: 260. Jul 1895; *Chaetoseris dolichophylla* C. Shih; *C. grandi-*

flora C. Shih, nom. illeg. superfl.; *Cicerbita grandiflora* Beauverd, nom. illeg. superfl.; *L. grandiflora* Franchet, nom. illeg. superfl.; *L. pseudosonchus* H. Léveillé.

Herbs 50–100 cm tall, perennial. Root turniplike. Stems solitary or few, erect, apically branched and glandular hairy. Basal leaves elliptic and basally attenuate into a long narrow petiole-like portion, 20–30 × 10–15 cm, pinnatipartite to pinnatisect and often lyrately so, margin dentate; lateral lobes 3–5 pairs, elliptic to rhombic, gradually smaller toward leaf base, apex obtuse to acute; terminal lobe triangular, ± irregularly rhombic, elliptic, or lanceolate, much larger than lateral lobes, base hastate to rounded, apex acute to obtuse. Lower and middle stem leaves shortly petiolate to sessile and clasping, similar to basal leaves but smaller; lateral lobes 3–7 pairs. Upper stem leaves sessile, less divided and smaller. Synflorescence racemiform or paniculiform, with few to several capitula. Capitula nodding before anthesis, with usually 25–35 florets; peduncle (1–)2–6(–10) cm. Involucre dark purplish green, broadly campanulate, 1.7–2.1 × 1–1.5 cm. Phyllaries glabrous or rarely glandular hispid, apex acute; outer phyllaries triangular-ovate to lanceolate. Florets blue to bluish purple. Achene 6–7 mm; body dark brown, ellipsoid, compressed, lateral ribs broadened, apex tapering into a pale 1–2 mm thick beak. Pappus double, outer hairs 0.2–0.3 mm, bristles ca. 8 mm. Fl. and fr. Jul–Nov. 2*n* = 16*.

Forests, forest margins, thickets, alpine meadows; 2800–4000 m. Sichuan, Xizang, Yunnan [Myanmar].

Franchet published the name *"Lactuca atropurpurea"* twice in 1895, in July (J. Bot. (Morot) 9: 260) and in August (J. Bot. (Morot) 9: 294), the latter name for a species of *Dubyaea* and illegitimate as a later homonym but under to Art. 58.1 of the *Vienna Code* the epithet is available for use in the new name *D. atropurpurea* Stebbins. In October 1895 (J. Bot. (Morot) 9: 368), Franchet unfortunately renamed the legitimate earlier homonym to *L. grandiflora*, which is thus illegitimate, as are the combinations in *Chaetoseris* and *Cicerbita* based on it. *Chaetoseris dolichophylla* seems not actually distinct from *Melanoseris atropurpurea* and is here tentatively included in this species.

13. Melanoseris leiolepis (C. Shih) N. Kilian & J. W. Zhang, **comb. nov.**

光苞毛鳞菊 guang bao mao lin ju

Basionym: *Chaetoseris leiolepis* C. Shih, Acta Phytotax. Sin. 29: 402. 1991.

Herbs to 1 m tall, perennial. Stem solitary, erect, apically branched and glandular hairy. Lower and middle stem leaves narrowly elliptic and basally attenuate into winged ± clasping petiole-like portion, 10–14 × 2.5–4 cm, lyrately pinnatifid to lyrately pinnatipartite, sparsely glandular hairy, margin shallowly sinuate-dentate; lateral lobes 1 or 2 pairs, semiorbicular to elliptic, apex rounded to obtuse; terminal lobe narrowly ovate to lanceolate, 5–8 × 2.5–4 cm, margin ± sinuate, apex acute to acuminate. Upper stem leaves ± sessile, narrowly elliptic to linear-lanceolate, smaller, lyrately pinnatifid or not divided. Synflorescence racemiform or sparsely paniculiform, with few to several capitula. Capitula nodding, with usually 12–16 florets. Involucre campanulate, 1.7–2 × 0.7–1 cm. Phyllaries glabrous, apex acute to obtuse; outer phyllaries triangular-ovate to lanceolate. Florets purple. Achene 6–7 mm; body brown to dark brown, ellipsoid, compressed, lateral ribs broadened, apex tapering into a paler 1–2 mm beak. Pappus double, outer hairs 0.1–0.2 mm, bristles ca. 8 mm. Fl. and fr. Oct.

● Mountain slopes; ca. 2500 m. Yunnan (Jingdong).

14. Melanoseris likiangensis (Franchet) N. Kilian & Z. H. Wang, **comb. nov.**

丽江毛鳞菊 li jiang mao lin ju

Basionym: *Lactuca likiangensis* Franchet, J. Bot. (Morot) 9: 259. 1895; *Chaetoseris bonatii* (Beauverd) C. Shih; *C. likiangensis* (Franchet) C. Shih; *Cicerbita bonatii* Beauverd; *C. likiangensis* (Franchet) Beauverd; *L. bonatii* (Beauverd) H. Léveillé; *L. forrestii* W. W. Smith.

Herbs 40–60 cm tall, perennial. Rhizomes thick. Stem solitary, erect, apically branched and mostly densely glandular hairy. Basal and lower stem leaves narrowly ovate to narrowly elliptic and basally attenuate into a ± winged petiole-like portion, 12–25 × 3–10 cm, pinnatipartite to pinnatisect, margin ± coarsely sinuate-dentate; lateral lobes 3–7 pairs, lowermost small and triangular, others elliptic to suborbicular, apex acute to obtuse; terminal lobe triangular-ovate to lanceolate, distinctly larger than lateral lobes, apex acuminate to acute. Middle and upper stem leaves similar to lower leaves but smaller and sessile with an auriculately clasping base; uppermost leaves lanceolate to elliptic-lanceolate, less divided or undivided. Synflorescence paniculiform, with several to many capitula. Capitula drooping to nodding, with ca. 10 florets; peduncle wiry, 0.5–3 cm. Involucre cylindric, 1.3–1.8 × 0.4–0.6 cm. Phyllaries purplish green, glandular hispid; outer phyllaries triangular-ovate to lanceolate; inner phyllaries ca. 8. Florets blue to bluish purple. Achene 6–8 mm; body brownish red, narrowly ellipsoid, compressed, lateral ribs broadened, apex contracted into a paler ca. 2 mm beak. Pappus double, outer hairs 0.1–0.2 mm, bristles 6–8 mm. Fl. and fr. Aug–Oct. 2*n* = 16*.

● Forests, open boulder-strewn slopes, grasslands; 1900–3100 m. Yunnan.

According to the type material preserved at G, *Chaetoseris bonatii*, based on *Cicerbita bonatii*, is apparently conspecific.

15. Melanoseris pectiniformis (C. Shih) N. Kilian & J. W. Zhang, **comb. nov.**

栉齿毛鳞菊 zhi chi mao lin ju

Basionym: *Chaetoseris pectiniformis* C. Shih, Acta Phytotax. Sin. 29: 408. 1991.

Herbs ca. 90 cm tall, perennial. Stem purplish red below middle, branched from middle or apically and sparsely glandular hairy. Lower stem leaves narrowly elliptic and basally attenuate into a short petiole-like portion, pinnatipartite to subpinnatisect, margin dentate. Middle stem leaves to 10 × 1.5 cm, basally with an auriculately or sagittately clasping petiole-like portion; lateral lobes 5–7 pairs, opposite to obliquely opposite, lanceolate to elliptic, gradually smaller toward leaf base, rachis sometimes pectinate, apex acute to obtuse; terminal lobe lanceolate. Upper stem leaves narrowly elliptic, smaller, less divided, margin entire. Synflorescence racemiform, with few capit-

ula. Capitula with ca. 15 florets. Involucre cylindric, ca. 1.5 × 0.6 cm. Phyllaries glandular hispid, apex acute to obtuse; outer phyllaries lanceolate to linear-lanceolate. Florets purplish red. Achene ca. 6 mm; body dark brown, ellipsoid, compressed, lateral ribs broadened, apex attenuate into a 2–3 mm beak. Pappus double, outer hairs 0.1–0.2 mm, bristles ca. 7 mm. Fl. and fr. Aug.

● Forests in mountain valleys; ca. 3200 m. Xizang (Mainling).

16. Melanoseris tenuis (C. Shih) N. Kilian, **comb. nov.**

全叶细莴苣 quan ye xi wo ju

Basionym: *Stenoseris tenuis* C. Shih, Acta Phytotax. Sin. 29: 412. 1991.

Herbs 0.5–1.5 m tall, perennial. Stem solitary, erect, apically branched and glandular hairy. Lower and middle stem leaves with petiole 5–8 cm, basally slightly widened and not clasping; leaf blade triangular to triangular-ovate, 5–14 × 5–10 cm, undivided, glandular hairy, glabrescent, base somewhat cuneate to truncate, shallowly cordate, or shallowly hastate, margin mucronulate-dentate, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but with shorter petiole and smaller; uppermost stem leaves sessile or subsessile. Synflorescence paniculiform, with usually numerous capitula and capillaceous branches. Capitula with 3 florets; peduncle capillaceous. Involucre green, narrowly cylindric, 11–13 × ca. 1.5 mm. Phyllaries glabrous; outer phyllaries ovate to lanceolate, longest ca. 3 × 1 mm, apex acute; inner phyllaries 3. Florets bluish purple. Achene ca. 5 mm; body brown, narrowly ellipsoid to obcolumnar, compressed, lateral ribs broadened, apex contracted into a thick ca. 1 mm beak. Pappus ± single, ca. 6 mm. Fl. and fr. Aug–Sep.

● Forest margins, forests, thickets; 2400–3100 m. S and SE Xizang (Bomi, Nyalam, Yadong), NW Yunnan.

17. Melanoseris triflora (C. C. Chang & C. Shih) N. Kilian, **comb. nov.**

栉齿细莴苣 zhi chi xi wo ju

Basionym: *Stenoseris triflora* C. C. Chang & C. Shih, Acta Phytotax. Sin. 29: 413. 1991.

Herbs to 1.2 m tall, perennial. Stem stout, apically branched and glandular hairy. Middle stem leaves with petiole 9–11 cm, pectinate, basally slightly widened; leaf blade lyrately pinnatisect with pectinate rachis, glandular hairy, glabrescent; lateral lobes 1 or 2 pairs, elliptic, ovate, or lanceolate, much smaller than terminal lobe, base rounded, margin coarsely mucronulate-dentate, apex acute to shortly acuminate; terminal lobe ovate to ovate-lanceolate, 9–11 × 7–9 cm, base truncate, shallowly cordate, or broadly cuneate, apex acuminate to acute. Upper stem leaves smaller, with shorter pectinate petiole, and 1 pair of lateral lobes, otherwise similar to middle stem leaves; uppermost leaves lanceolate, ± undivided, apex acuminate. Synflorescence paniculiform, with numerous capitula and capillaceous branches. Capitula with 3 florets; peduncle capillaceous. Involucre narrowly cylindric, 9–11 × 1–1.5 mm. Phyllaries glabrous; outer phyllaries ovate, longest ca. 1.5 × 0.5–1 mm, apex obtuse to acute; inner phyllaries 3. Florets purplish red. Achene ca. 4 mm; body pale brown, ellipsoid, compressed, lateral ribs broadened, apex constricted into a thick 0.5–1 mm beak. Pappus ± single, ca. 6 mm. Fl. and fr. Oct.

● Forest margins, forests; 2000–2800 m. Yunnan (Fugong, Lüchun).

18. Melanoseris graciliflora (Candolle) N. Kilian, **comb. nov.**

细莴苣 xi wo ju

Basionym: *Lactuca graciliflora* Candolle, Prodr. 7: 139. 1838; *Cicerbita taliensis* (Franchet) Beauverd; *L. taliensis* Franchet; *Stenoseris graciliflora* (Candolle) C. Shih; *S. taliensis* (Franchet) C. Shih.

Herbs 0.5–2.5 m tall, perennial. Root slenderly turniplike. Stem solitary, erect, apically branched and glabrous or sparsely glandular hairy. Lower and middle stem leaves with petiole 4–7 cm, basally slightly widened; leaf blade pinnatisect to lyrately pinnatisect, glandular hairy, margin shallowly mucronulate-dentate; lateral lobes 2 or 3 pairs but uppermost pair often incompletely separated from terminal lobe, opposite or alternate, sessile or shortly petiolulate, elliptic to lanceolate, 1.5–4.5 × 1–2 cm, base cuneate to truncate, apex acute to acuminate; terminal lobe triangular-ovate to lanceolate, 5.5–11 × 4–9 cm, base hastate, cordate, truncate, or cuneate, apex acute. Upper stem leaves shortly petiolate to subsessile, smaller, less or not divided, otherwise similar to middle stem leaves. Synflorescence paniculiform, with numerous capitula and capillaceous branches. Capitula with usually 3 or 4 florets; peduncle capillaceous. Involucre narrowly cylindric, 12–15 × ca. 1.5 mm. Phyllaries glabrous; outer phyllaries triangular-ovate to lanceolate, largest ca. 3 × 1 mm, apex acute; inner phyllaries 3. Florets bluish purple. Achene 6–7 mm; body brown, narrowly ellipsoid to obcolumnar, compressed, lateral ribs broadened, apex contracted into a thick 1–1.5 mm beak. Pappus ± single, 6–7 mm. Fl. and fr. Jun–Sep. 2*n* = 16*.

Thickets, forest margins, grasslands; 2800–3500 m. Guizhou, Sichuan, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal].

19. Melanoseris leptantha (C. Shih) N. Kilian, **comb. nov.**

景东细莴苣 jing dong xi wo ju

Basionym: *Stenoseris leptantha* C. Shih, Acta Phytotax. Sin. 29: 414. 1991.

Herbs 50–70 cm tall, perennial. Stem solitary, erect, apically branched and sparsely glandular hairy. Lower and middle stem leaves with petiole 1–4 cm, basally slightly widened; leaf blade lyrately pinnatisect, glabrous, margin mucronulate-dentate; lateral lobes 1 pair, elliptic, ca. 2 × 1 cm, apex obtuse to rounded; terminal lobe elliptic to lanceolate, 5.5–10 × 3–4 cm, apex acuminate. Upper stem leaves petiolate or sessile, lanceolate to elliptic, 7–9 × ca. 1.5 cm, undivided, base cuneate, otherwise similar to middle stem leaves. Synflorescence paniculiform, with numerous capitula and capillaceous branches. Capitula with ca. 3 florets; peduncle capillaceous. Involucre narrowly cylindric, ca. 10 × 2 mm. Phyllaries purplish red, glabrous; outer phyllaries ovate, largest ca. 1 × 0.5 mm, apex obtuse; inner phyllaries 3. Florets bluish purple. Achene ca. 4 mm; body yellowish brown, narrowly ellipsoid to obcolumnar,

compressed, lateral ribs broadened, apex contracted into a thick ca. 1 mm beak. Pappus ± single, ca. 5 mm. Fl. and fr. Nov. 2*n* = 16*.

● Moist areas on mountain slopes; 2500–3200 m. Sichuan (Muli), Yunnan (Jingdong).

Melanoseris leptantha appears rather similar to *Stenoseris triflora*, and its specific distinctness needs confirmation.

20. Melanoseris oligolepis (C. C. Chang ex C. Shih) N. Kilian, **comb. nov.**

大理毛鳞菊 da li mao lin ju

Basionym: *Cicerbita oligolepis* C. C. Chang ex C. Shih, Acta Phytotax. Sin. 29: 398. 1991.

Herbs 0.6–1.3 m tall, perennial. Stem solitary, erect, apically branched and ± brownish pilose, leafy. Lower and middle stem leaves with petiole to 6 cm, unwinged; leaf blade obovate to oblanceolate, pinnatisect, margin faintly sinuate-dentate; lateral lobes 1 or 2 pairs, narrowly elliptic, 2.5–4 × 1–1.5 cm, apex acute to acuminate; terminal lobe ovate to lanceolate, 4–10 × 2–4 cm, apex acute to acuminate. Synflorescence narrowly paniculiform, with numerous capitula and capillaceous branches. Capitula with 4 florets; peduncle capillaceous. Involucre narrowly cylindric, 9–11 × ca. 2 mm. Phyllaries glabrous; outer phyllaries triangular-ovate to lanceolate, longest ca. 2 mm; inner phyllaries 4. Florets blue. Achene brown, narrowly ellipsoid, 4–5 mm, compressed, lateral ribs broadened, apex truncate. Pappus double, outer hairs to 0.1 mm, bristles ca. 7 mm. Fl. and fr. Aug.

● Forests on mountain slopes; 2100–3000 m. Yunnan (Dali).

Originally placed in *Cicerbita*, *Melanoseris oligolepis* is morphologically near and apparently closely related to the preceding four species.

21. Melanoseris lessertiana (Candolle) Decaisne in Jacquemont, Voy. Inde 4(Bot.): 102. 1843.

黑苞毛鳞菊 hei bao mao lin ju

Mulgedium lessertianum Candolle, Prodr. 7: 251. 1838; *Cicerbita lessertiana* (Candolle) Mamgain & R. R. Rao; *C. lessertiana* subsp. *lyrata* (Decaisne) Mamgain & R. R. Rao; *Lactuca lessertiana* (Candolle) C. B. Clarke; ?*L. monocephala* C. C. Chang; *Melanoseris lyrata* Decaisne; ?*Mulgedium monocephalum* (C. C. Chang) C. Shih; ?*M. qinghaicum* S. W. Liu & T. N. Ho.

Herbs 5–30[–40] cm tall, perennial. Root slenderly turniplike. Stems usually several, weak, sparsely branched, glabrous to apically reddish villous, rarely with a solitary dominant stem branched from base. Basal and lower stem leaves elliptic to oblanceolate, 6–9[–15] × 1–2[–3.5] cm, undivided to lyrately pinnatisect, base cuneate to petiole-like, margin entire to shallowly sinuate-dentate, apex acute to shortly acuminate; lateral lobes 2 or 3 pairs, ovate, triangular-ovate, or ± elliptic; terminal lobe ovate to triangular-ovate. Middle and upper stem leaves smaller and narrower, less or not divided, basally less attenuate; uppermost leaves linear to linear-lanceolate. Synflorescence racemiform, with 1 to several capitula. Capitula with usually 12–24 florets; peduncle mostly 1–2 cm. Involucre campanulate, 1–1.3 cm at anthesis, to 1.8 × 0.7–1 cm in fruit. Phyllaries acute at apex; outer phyllaries lanceolate, abaxially ± villous; inner phyllaries 8. Florets purplish red to bluish. Achene 6–8(–10) mm; body dark to blackish brown, ellipsoid, compressed, lateral ribs broadened, apex contracted into a concolorous to pale 2–3(–5) mm slender beak. Pappus single, 6–8 mm. Fl. and fr. Aug–Sep. 2*n* = 16.

Grasslands on mountain slopes; 2700–4500 m. ?Qinghai, Xizang, NW Yunnan [Bhutan, N India, Kashmir, Nepal, Pakistan].

Melanoseris lessertiana shows considerable variation in habit, leaf shape, and achene beak length over its distribution area, which is worth closer investigation. The single-headed *Lactuca monocephala* has tentatively been included, considering it a depauperate form, because otherwise the type image matches *M. lessertiana*. The type material of *Mulgedium qinghaicum* has not been available for loan, but from the description and figure it appears likely conspecific and has also tentatively been included.

22. Melanoseris macrorhiza (Royle) N. Kilian, **comb. nov.**

头嘴菊 tou zui ju

Basionym: *Mulgedium macrorhizum* Royle, Ill. Bot. Himal. Mts. 251, t. 61, f. 1. 1835; *Cephalorrhynchus albiflorus* C. Shih; *C. macrorhizus* (Royle) Tuisl; *C. saxatilis* (Edgeworth) C. Shih; *Cicerbita duthieana* Beauverd; *C. laevigata* (Candolle) Beauverd; *C. macrorhiza* (Royle) Beauverd; *C. macrorhiza* var. *saxatilis* (Edgeworth) Beauverd; *Lactuca hoffmeisteri* Klotzsch; *L. laevigata* (Blume) Candolle var. *saxatilis* (Edgeworth) C. B. Clarke; *L. macrorhiza* (Royle) J. D. Hooker; *Melanoseris saxatilis* Edgeworth; *Mulgedium laevigatum* Candolle.

Herbs 20–50 cm tall, perennial. Taproot slenderly turniplike. Stems solitary or few, slender, ascending-erect to erect, branched from base or higher up, glabrous [or purplish brown pilose], leafy. Lower and middle stem leaves with petiole of lower ones not basally expanded and middle ones expanded and auriculate; leaf blade elliptic to spatulate, 6–14.5[–20] × 1–4.5 cm, lyrately pinnatifid to lyrately pinnatisect, rachis glabrous [or ± hispid with purplish brown hairs], margin entire; lateral lobes 2–4(–6) pairs, orbicular to elliptic, apex obtuse to rounded; terminal lobe largest, ovate-cordate, reniform, or elliptic, apex rounded to acute. Upper stem leaves similar to middle stem leaves but smaller; uppermost leaves lanceolate to broadly linear, undivided. Synflorescence loosely to paniculately corymbiform, with usually to 8–10 capitula and slender branches. Capitula with usually 10–15 florets; peduncle capillaceous. Involucre cylindric to narrowly campanulate, (1–)1.2–1.5 × 0.4–0.5 cm. Phyllaries dark purplish green, glabrous; outer phyllaries triangular-ovate to lanceolate, longest ca. 1/2 as long as inner ones; inner phyllaries 8. Florets purple, bluish purple, or rarely white. Achene 4–5 mm; body dark brown, narrowly ellipsoid, subcompressed, lateral ribs weakly broadened, apex attenuate into pale 1–3 mm stout beak. Pappus double, outer row of hairs 0.1–0.2 mm, bristles 6–7 mm. Fl. and fr. Jul–Oct. 2*n* = 16.

Mountain valleys, forests, thickets, grasslands; 2700–4000 m. Xizang, Yunnan [Afghanistan, Bhutan, N India, Kashmir, Myanmar, Nepal, Pakistan; SW Asia].

Whereas, according to the molecular phylogenetic analysis by N. Kilian et al. (in prep.), *Cephalorrhynchus* in the sense of its type (*C.*

glandulosus Boissier) is a congener of *Cicerbita*, *Melanoseris macrorhiza*, previously treated as a member of *Cephalorrhynchus* (e.g., FRPS 80(1): 291. 1997), clearly belongs to *Melanoseris*. The white-flowered *C. albiflorus* is considered as a mere albino form of this species, as is known also occasionally in other species, and therefore treated as conspecific.

23. Melanoseris violifolia (Decaisne) N. Kilian, **comb. nov.**

西藏毛鳞菊 xi zang mao lin ju

Basionym: *Prenanthes violifolia* Decaisne in Jacquemont, Voy. Inde 4(Bot.): 100. 1843 [*"violaefolia"*]; *Cicerbita sikkimensis* (J. D. Hooker) C. Shih; *C. violifolia* (Decaisne) Beauverd; *Lactuca hookeri* (C. B. Clarke ex J. D. Hooker) Stebbins; *L. sikkimensis* (J. D. Hooker) Stebbins; *P. alata* J. D. Hooker & Thomson ex C. B. Clarke (1876), not (Hooker) D. Dietrich (1847); *P. hookeri* C. B. Clarke ex J. D. Hooker; *P. sikkimensis* J. D. Hooker.

Herbs 50–70 cm tall, perennial. Stem solitary, erect, branched apically, glabrous or sparsely strigose. Basal, lower, and middle stem leaves with petiole 5–6 cm, slender, ± broadly winged toward base; leaf blade undivided or lyrately pinnatisect, margin sparsely sinuate-dentate to subentire; lateral lobes if present 1 pair, sessile or with a 7–8 mm winged petiolule, lanceolate to elliptic, to 2 × 1 cm; terminal lobe broadly triangular to triangular-ovate, 3–8 × 3–7 cm, base hastate, cordate, sagittate, or truncate, apex obtuse to rounded. Upper stem leaves similar to middle stem leaves or with much shorter winged basally narrow to clasping petiole and smaller blade with a basally cuneate terminal lobe. Synflorescence paniculiform, with several to 30 capitula and slender branches. Capitula with 4–6 florets; peduncle capillaceous. Involucre narrowly cylindric, 1.2–1.4 × ca. 0.3 cm. Phyllaries glabrous, apex acute to obtuse; outer phyllaries lanceolate, longest 4–5 mm; inner phyllaries 5(or 6). Florets bluish to reddish purple. Achene dark brown, narrowly ellipsoid, 6–7 mm, subcompressed, lateral ribs weakly broadened, apex truncate. Pappus double, outer hairs ca. 0.1 mm, bristles 6–8 mm. Fl. and fr. Jun–Aug.

Forests, forest margins, meadows; 3000–3700 m. Xizang [Bhutan, N India, Kashmir, Nepal].

Melanoseris violifolia, formerly treated as a member of *Cicerbita* (e.g., FRPS 80(1): 223. 1997, under *C. sikkimensis*) is, as inferred from morphology, closely related to *M. macrorhiza* and can therefore safely be considered as a member of *Melanoseris* too.

24. Melanoseris bracteata (J. D. Hooker & Thomson ex C. B. Clarke) N. Kilian, **comb. nov.**

苞叶毛鳞菊 bao ye mao lin ju

Basionym: *Lactuca bracteata* J. D. Hooker & Thomson ex C. B. Clarke, Compos. Ind. 270. 1876; *Mulgedium bracteatum* (J. D. Hooker & Thomson ex C. B. Clarke) C. Shih.

Herbs, perennial. Root slender. Stem solitary, 20–120 cm, erect, branched apically, strongly glandular hairy to glandular hispid. Basal and lower stem leaves ovate, elliptic-ovate, or oblanceolate, 3–6[–11] × 1–2.5[–4] cm, glandular hairy, base attenuate and auriculately clasping, margin sinuate-dentate, apex acute. Middle and upper stem leaves smaller, oblanceolate to lanceolate, apex acuminate, otherwise similar to lower leaves. Leaves in synflorescence usually purplish red when dry, lanceolate, base ± semiamplexicaul, margin entire, apex acuminate. Synflorescence racemiform or sparsely paniculiform, leafy, with several to 20 capitula. Capitula nodding at anthesis, with usually 20–30 florets; peduncle with lanceolate bracts to 1.5 cm. Involucre campanulate, 1.2–1.4 cm at anthesis, to 1.9 × 1 cm in fruit. Phyllaries purplish red when dry, abaxially glabrous, apex obtuse to acute; outer phyllaries lanceolate, not much shorter than inner phyllaries. Florets pale blue to mauve. Achene 5–9 mm; body grayish brown, fusiform, compressed, lateral ribs weakly broadened, apex attenuate into a slender beak 1/3–1/2 as long as achene body. Pappus indistinctly double, 7–8 mm. Fl. and fr. Sep. $2n = 16$.

Forests; 800–3000 m. Xizang [Bhutan, NE and NW India, Nepal].

25. Melanoseris souliei (Franchet) N. Kilian, **comb. nov.**

康滇毛鳞菊 kang dian mao lin ju

Basionym: *Lactuca souliei* Franchet, J. Bot. (Morot) 9: 257. 1895; *Syncalathium orbiculariforme* C. Shih; *S. souliei* (Franchet) Y. Ling.

Herbs 2–5 cm tall, perennial, rosulate, ± acaulescent, with a taproot. Rosette shoot terminally hollow, inflated to secondary capitulum. Leaves with petiole 1–5 cm, basally widened; leaf blade of outer leaves undivided, broadly triangular, triangular-ovate, orbicular, or obovate, 0.5–2 × 0.5–1.5 cm; leaf blade of more inner leaves 1.5–7 × 1–2.5 cm, lyrately pinnatipartite to pinnatisect, margin sinuate-dentate or entire; lateral lobes 1–3 pairs, elliptic, semiorbicular, triangular, or suborbicular; terminal lobe elliptic, ovate, suborbicular, or triangular-ovate, 1–3 × 0.8–2.5 cm, base cordate to truncate, apex rounded to acute. Secondary capitulum (1–)2–7 cm in diam., with few to many sessile densely congested capitula with 1 elliptic subtending leaf. Capitula with 4–6 florets. Involucre narrowly cylindric, 1–1.4 × 0.4–0.5 cm. Phyllaries 5, in 1 row, equal, lanceolate, connate for basal 1/3–1/2. Florets purplish red to blue. Achene ca. 4 mm; body dark to blackish brown, obovoid, compressed, with winglike lateral ribs and 1 slender rib on either side, apex constricted into a ca. 0.5 mm fragile thin beak. Pappus single, ca. 8 mm, caducous with pappus disk. Fl. and fr. Aug. $2n = 16$*.

Alpine meadows, scree slopes, stony areas, marshes, forest margins; 2300–4300 m. Sichuan, Xizang, Yunnan [?Bhutan, Myanmar].

Recent works, corroborating the observation by Stebbins (Mem. Torrey Bot. Club 19(3): 47–50. 1940) on the peculiarity of *Melanoseris souliei* inferred from achene morphology, have shown that *M. souliei* is misplaced in *Syncalathium* and the Crepidinae (J. W. Zhang et al., Bot. J. Linn. Soc. 154: 79–87. 2007; N. Kilian et al. in V. A. Funk et al., Syst. Evol. Biogeogr. Compositae, 348–350. 2009; J. W. Zhang et al., Taxon 60: 15–26. 2011) and the striking overall similarity to the species of that genus purely a result of convergent evolution in response to the environmental changes following the uplift of the Qinghai-Xizang Plateau. The inclusion of *Syncalathium orbiculariforme* by X. Zhuang (Fl. Yunnan. 13: 764. 2004) has been supported also by molecular studies (J. W. Zhang et al., loc. cit. 2011). The molecular phylogenetic analysis of subtribe Lactucinae (N. Kilian et al., in prep.) reveals the species to be nested in the *Melanoseris* clade. It is here therefore tentatively assigned to *Melanoseris*, admitting that this is debatable in the light of its peculiar morphology and the still not settled circumscription of the genus.

Lactuca scandens C. C. Chang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 9: 133. 1934.

攀援岩参 pan yuan yan shen

Herbs, perennial. Stem semiscandent, pale purplish red, with reddish bristles. Basal leaves unknown. Lower and middle stem leaves with red bristles and with slender basally ± widened, ± winged petiole to ca. 9 cm; leaf blade suborbicular or subreniform, 4.5–5.5 × 4.5–7.5 cm, base cordate, margin faintly denticulate, apex acuminate. Uppermost stem leaves sessile or with short, winged, clasping petiole and ovate to narrowly elliptic-ovate blade, otherwise similar to middle stem leaves. Synflorescence racemiform, branches 1–1.5 cm with 2 or 3 capitula. Capitula with 4 or 5 florets. Involucre narrowly cylindric, ca. 1.2 cm. Phyllaries blackish green, reddish setose; outer phyllaries inconspicuous; inner phyllaries 4 or 5, apex subacute. Florets yellow. Achene not seen when mature. Pappus white, ca. 6.5 mm.

● Chongqing (Baxian).

No material has been available of *Lactuca scandens*, based on and only known from the collection *T. T. Yü 1702* made in October 1932 in the "vicinity of Pa-hsien" (deposited in the herbarium of the Science Society of China at Nanking). C. C. Chang compared it with, and considered it to be related to, the insufficiently known *L. hirsuta* Franchet, placed here in *Melanoseris* not without doubt (see above). *Lactuca scandens* is diagnosed rather clearly, and in its combination of characters it resembles only few known species of Cichorieae in China (even if the presumed scandent habit is ignored) but matches none in a way that conspecificity could be proposed with sufficient confidence. A safe generic assignment, however, is not possible from the original description; thus, its treatment under *Melanoseris* is very tentative and a formal transfer not justified.

59. PARAPRENANTHES C. C. Chang ex C. Shih, Acta Phytotax. Sin. 26: 418. 1988.

假福王草属 jia fu wang cao shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, perennial or more rarely annual. Stem usually solitary, erect, branched apically, glabrous or glandular hairy, leafy or rarely ± leafless. Leaves pinnately lobed or more rarely undivided. Synflorescence with capillaceous branches. Capitula often pendent at anthesis, with 4–15 florets; peduncle capillaceous. Involucre narrowly cylindric. Phyllaries usually green and tinged pale purplish red, glabrous; outer phyllaries few, gradually longer centripetally, mostly much shorter than inner phyllaries; inner phyllaries usually 5 or 8, ± equal in length, ± linear-lanceolate to linear. Receptacle naked. Florets pale reddish or purple. Achene body dark to blackish brown, fusiform, weakly compressed, with 5 main ribs (2 lateral, 1 median ventrally, and 2 median dorsally) and 2 rather similar secondary ribs in between, apically attenuate and pale but without or rarely with a short beak. Pappus white, single, of slender scabrid bristles.

Twelve species: E and SE Asia; 12 species (11 endemic) in China.

1a. Involucre with 5(or 6) inner phyllaries.
  2a. Stem leafless or with a single or very few leaves; leaves mostly undivided or more rarely with 1 pair of very small ovate lateral lobes ..... 6. *P. umbrosa*
  2b. Stem leafy throughout; leaves with 1–7 pairs of lateral lobes or more rarely undivided.
    3a. Lower and middle stem leaves pinnatisect to subpinnatisect, with 4–7 pairs of ± narrowly elliptic lateral lobes, rachis for most part not or narrowly winged ..... 10. *P. dolichophylla*
    3b. Lower and middle stem leaves lyrately pinnatifid to pinnatisect, with 1–4 pairs of elliptic to triangular lobes or more rarely undivided, rachis for most part at least broadly winged.
      4a. Stem leaves with mostly a slender cuneately winged petiole and undivided blade or blade lyrately pinnatipartite to lyrately pinnatisect with 1 or 2(or 3) pairs of lobes ..... 8. *P. diversifolia*
      4b. Stem leaves with an unwinged petiole and lyrately pinnatifid to lyrately pinnatipartite blade with 3 or 4 pairs of lobes ..... 9. *P. heptantha*
1b. Involucre with ca. 8 inner phyllaries.
  5a. Middle and upper stem leaves auriculately to sagittately clasping stem.
    6a. Leaves sagittately clasping stem; outer phyllaries longest 5–8 mm ..... 2. *P. yunnanensis*
    6b. Leaves auriculately clasping stem; outer phyllaries longest 4–5 mm ..... 3. *P. auriculiformis*
  5b. Stem leaves not clasping stem and except for uppermost ± petiolate.
    7a. Stem leaves all palmately 3-lobed or palmately 3-cleft ..... 11. *P. multiformis*
    7b. Stem leaves undivided or pinnately lobed with 1–8 pairs of lateral lobes.
      8a. Middle stem leaves sessile, 3-parted, with to 20 cm linear terminal lobe and 1 pair of very small broadly linear-lanceolate lateral lobes at its base ..... 12. *P. longiloba*
      8b. Middle stem leaves petiolate, undivided or pinnately divided with (1 or)2–5 pairs of lateral lobes.
        9a. Middle stem leaves lyrately pinnate, pinnatifid, or pinnatisect with broader lateral or terminal lobes or rarely undivided.
          10a. Leaves adaxially glaucous, margin shallowly and distantly dentate; synflorescence corymbiform; achene ca. 5 mm, attenuate into a pale stout ca. 1 mm beak ..... 1. *P. polypodiifolia*

10b. Leaves adaxially green, margin usually strongly dentate; synflorescence narrowly paniculiform; achene 4–5 mm, attenuate into a pale ca. 1 mm beaklike apex ..... 7. *P. sororia*

9b. Middle stem leaves pinnatisect with conspicuously narrow and longish (most of them linear or linear-lanceolate) lateral and terminal lobes.

11a. Basal leaves undivided but other leaves pinnatisect with 1–3(or 4) pairs of lateral lobes ..... 4. *P. prenanthoides*

11b. All but uppermost leaves pinnatisect, with 2–8 pairs of lateral lobes ..... 5. *P. glandulosissima*

1. Paraprenanthes polypodiifolia (Franchet) C. C. Chang ex C. Shih, Fl. Reipubl. Popularis Sin. 80(1): 181. 1997.

蕨叶假福王草 jue ye jia fu wang cao

Lactuca polypodiifolia Franchet, J. Bot. (Morot) 9: 265. 1895; *Mulgedium meridionale* C. Shih; *M. polypodiifolium* (Franchet) C. Shih; *Paraprenanthes meridionalis* (C. Shih) Sennikov.

Herbs 50–110 cm tall, perennial. Stem apically densely glandular hairy. Leaves glaucous, glabrous, all with unwinged or weakly winged petiole, margin of leaf blade shallowly and distantly mucronulately dentate. Basal leaves, lower stem leaves, and middle stem leaves with petiole 9–12 cm; leaf blade lyrately pinnatifid to pinnatisect, margin sinuate; lateral lobes 1 or 2(–4) pairs, elliptic-rhombic, ovate, or triangular-ovate, much smaller than terminal lobe, apex obtuse to acute; terminal lobe triangular-ovate to lanceolate, 5–8 × 3.5–6 cm, base cordate, truncate, or cuneate, apex acute to shortly acuminate. Upper stem leaves smaller, with a shorter petiole; leaf blade similar to middle stem leaves or undivided and ovate to broadly lanceolate. Synflorescence corymbiform, with some to many capitula on somewhat divaricating branchlets. Capitula with usually 10–15 florets. Involucre 9–11 × ca. 3 mm. Outer phyllaries triangular-ovate to linear-lanceolate, longest ca. 3 × 1 mm, apex acute; inner phyllaries 8, apex ± obtuse. Florets purplish red or rarely white. Achene ca. 5 mm, apically attenuate into a stout ca. 1 mm beak. Pappus ca. 6 mm. Fl. and fr. May–Jun.

● Trailsides on mountain slopes, forests in mountain valleys; 800–2000 m. Guangxi, Sichuan, Yunnan.

2. Paraprenanthes yunnanensis (Franchet) C. Shih, Acta Phytotax. Sin. 26: 421. 1988.

云南假福王草 yun nan jia fu wang cao

Lactuca yunnanensis Franchet, J. Bot. (Morot) 9: 264. 1895; *Paraprenanthes sagittiformis* C. Shih.

Herbs 0.6–1.5 m tall, perennial. Stem glabrous. Basal and lower leaves with petiole ca. 15 cm, winged; leaf blade to 30 × 15 cm, undivided and triangular-ovate with a cordate or truncate to cuneate base or pinnatisect with an additional 1 or 2 pairs of small lateral lobes; lateral lobes when present rhombic, triangular-ovate, or lanceolate, recurved, apex acute. Middle stem leaves with a short winged sagittately clasping petiole or sessile; leaf blade elliptic to oblanceolate, pinnatipartite to pinnatisect, glabrous to weakly glandular hairy, base sagittately clasping if sessile, margin ± sinuate and mucronulately dentate; lateral lobes 1–3(–5) pairs, 2–7 × 0.5–2(–4) cm; terminal lobe to 13 × 4 cm, otherwise like lower leaves. Upper stem leaves sessile, smaller, lanceolate, mostly not divided, base sagittately clasping; uppermost leaves linear-lanceolate, base not clasping, margin entire. Synflorescence paniculiform, with many capitula. Capitula with usually 10–15 florets. Involucre 10–13 × 3–4 mm. Outer phyllaries triangular to linear-lanceolate, largest 5–8 × ca. 1 mm, apex acute; inner phyllaries ± 8, apex obtuse to acute. Florets pale purple. Achene ca. 4 mm, attenuate into an almost beaked apex. Pappus 6–7 mm. Fl. and fr. Jul–Aug.

● River valleys, forests; 1500–2700 m. Yunnan.

The leaf shape of *Paraprenanthes yunnanensis* shows considerable variation even within a population, and we follow X. Zhuang (Fl. Yunnan. 13: 741. 2004) in considering *P. sagittiformis* as conspecific with *P. yunnanensis*. *Lactuca parishii* Craib from Myanmar and Thailand is very close to this species and may perhaps be conspecific.

3. Paraprenanthes auriculiformis C. Shih, Acta Phytotax. Sin. 26: 421. 1988.

圆耳假福王草 yuan er jia fu wang cao

Herbs, annual. Stem glabrous. Basal leaves unknown. Lower and middle stem leaves sessile, lanceolate, 10–14 × 3.5–6 cm, pinnatipartite, glabrous, base auriculately clasping, margin weakly sinuate and mucronulately dentate; lateral lobes 2 or 3 pairs, elliptic to narrowly triangular, apex rounded and mucronulate to acute; terminal lobe lanceolate to narrowly triangular, apex acute to acuminate. Upper stem leaves lanceolate, triangular, or narrowly elliptic, undivided, margin inconspicuously dentate or entire, apex acuminate. Synflorescence paniculiform, with some to many capitula. Capitula with usually 10 florets. Involucre 9–11 × ca. 3 mm. Outer phyllaries triangular-ovate to lanceolate, largest 4–5 × ca. 1 mm, apex acute; inner phyllaries ± 8, apex ± obtuse. Florets purple. Achene 3–4 mm, attenuate into a stout ca. 1 mm beaklike apex. Pappus 7–8 mm. Fl. and fr. Jul.

● Grasslands on mountain slopes; ca. 1900 m. Yunnan (Menghai).

Paraprenanthes auriculiformis is a little-known species in need of further studies with affinity to *P. yunnanensis*.

4. Paraprenanthes prenanthoides (Hemsley) C. Shih, Acta Phytotax. Sin. 26: 423. 1988.

异叶假福王草 yi ye jia fu wang cao

Crepis prenanthoides Hemsley, J. Linn. Soc., Bot. 23: 477. 1888; *Lactuca chungkingensis* Stebbins.

Herbs 30–130 cm tall, perennial. Stem apically densely glandular hairy. Basal leaves often present at anthesis; petiole 6–10 cm, unwinged; leaf blade triangular-ovate to broadly lanceolate, 3–11 × 3–7 cm, glabrous, base conspicuously cordate to hastate, margin sinuate and mucronulate-dentate, apex acute to shortly acuminate. Lower and middle stem leaves with a shorter petiole; leaf blade to 17 cm, pinnatisect, margin entire to very shallowly mucronulate-dentate, base cuneate; lateral lobes

1–3(or 4) pairs, opposite or alternate, rhombic-elliptic, lanceolate, or linear and sometimes falcate, to 8 cm, apex acute; terminal lobe narrowly elliptic, broadly lanceolate, or linear-lanceolate, to 13 cm, apex acute to acuminate. Upper stem leaves sessile, smaller, pinnatisect, lobes ± linear-lanceolate. Synflorescence paniculiform, with some to many capitula. Capitula with usually 12–15 florets. Involucre 9–11 × ca. 3 mm. Phyllaries with an obtuse to acute apex; outer phyllaries triangular-ovate to lanceolate, largest ca. 3 × 0.6–0.8 mm; inner phyllaries (7 or)8. Florets purplish red. Achene ca. 4 mm, attenuate into a stout ca. 1 mm beaklike apex. Pappus 5–6 mm. Fl. and fr. Apr–May.

● Forests; 500–1200 m. Guangxi, Guizhou, Sichuan.

5. Paraprenanthes glandulosissima (C. C. Chang) C. Shih, Fl. Reipubl. Popularis Sin. 80(1): 182. 1997.

密毛假福王草 mi mao jia fu wang cao

Lactuca glandulosissima C. C. Chang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 9: 130. 1934.

Herbs 40–100 cm tall, annual. Stem apically densely glandular hairy. Basal leaves, lower stem leaves, and middle stem leaves with petiole 3–7 cm, unwinged, basally not or scarcely widened; leaf blade pinnatisect, ± glabrous, margin very shallowly mucronulate-dentate or entire; lateral lobes 2–8 pairs, opposite to obliquely opposite; basal lateral lobes rhombic to elliptic, 5–20 × 4–10 mm; other lateral lobes linear-elliptic to linear-lanceolate, 2.5–6 × 0.5–2 cm, apex acute to acuminate; terminal lobe linear-elliptic to linear-lanceolate, 6–10 × 0.3–1.5 cm, apex acute to acuminate. Upper stem leaves shortly petiolate or sessile, similar to middle stem leaves or 3-parted; uppermost stem leaves linear-elliptic, undivided. Synflorescence paniculiform to corymbosely so, with many capitula. Capitula with usually 10–15 florets. Involucre 9–11 × ca. 3 mm. Outer phyllaries triangular to lanceolate, largest ca. 3 × 0.3–0.5 mm, apex acute; inner phyllaries 8, apex ± obtuse. Florets bluish purple. Achene ca. 4 mm, attenuate into a ca. 1 mm beaklike apex. Pappus 5–6 mm. Fl. and fr. Apr–May.

● Forests, forest margins; 500–2300 m. Sichuan, Yunnan.

Paraprenanthes glandulosissima appears closely allied to *P. prenanthoides*, and its specific distinctness should be critically assessed by further studies.

6. Paraprenanthes umbrosa (Dunn) Sennikov, Bot. Zhurn. 82(5): 111. 1997.

伞房假福王草 san fang jia fu wang cao

Lactuca umbrosa Dunn, J. Linn. Soc., Bot. 35: 513. 1903; *Mulgedium umbrosum* (Dunn) C. Shih.

Herbs 40–140 cm tall, annual. Stem glabrous, leafless, with a single leaf, or with very few leaves. Basal leaves with petiole 4–17 cm, unwinged; leaf blade mostly triangular to triangular-ovate, 6–13 × 5–10 cm, undivided, base cordate, hastate, or sagittate, margin entire or sinuate and remotely unequally mucronulately dentate; leaf blade more rarely lyrately pinnatisect with 1 pair of small ovate lateral lobes. Stem leaves if any triangular-hastate, undivided, otherwise like basal leaves. Synflorescence corymbiform to corymbosely paniculiform, with few to many capitula. Capitula with usually 6–10 florets. Involucres cylindric, 10–13 × 2–3 mm. Phyllaries glabrous, apex acute; outer phyllaries triangular-ovate to lanceolate, largest 5–7 × 1–2 mm; inner phyllaries 5(or 6). Florets purplish red. Achene ca. 6 mm, contracted into a ca. 1 mm beak. Pappus 6–7 mm. Fl. and fr. Oct.

● River valleys; ca. 1200 m. Yunnan.

Paraprenanthes umbrosa has previously been placed in *Mulgedium* (e.g., FRPS 80(1): 72. 1997). Its reclassification by Sennikov is convincing and is followed here.

7. Paraprenanthes sororia (Miquel) C. Shih, Acta Phytotax. Sin. 26: 422. 1988.

假福王草 jia fu wang cao

Lactuca sororia Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 189. 1866; *L. sororia* f. *glabra* Y. Ling; *L. sororia* var. *glabra* Kitamura; *L. sororia* var. *glandulosa* Kitamura; *L. sororia* var. *nudipes* (Migo) Kitamura; *L. sororia* var. *pilipes* (Migo) Kitamura; *L. thirionnii* H. Léveillé; *Mycelis sororia* (Miquel) Nakai; *M. sororia* var. *nudipes* Migo; *M. sororia* var. *pilipes* Migo; *Paraprenanthes hastata* C. Shih; *P. luchunensis* C. Shih; *P. pilipes* (Migo) C. Shih; *P. thirionnii* (H. Léveillé) C. Shih.

Herbs 0.5–1.5[–1.8] m tall, perennial. Stem glabrous or more rarely glandular hairy. Basal leaves withered at anthesis. Lower and middle stem leaves with petiole 3–7 cm, unwinged; leaf blade undivided and triangular-ovate to lanceolate or ± lyrately pinnatifid to ± lyrately pinnatisect, glabrous, base cordate, truncate, or cuneate, margin ± sinuate and mucronulately dentate; lateral lobes 1 or 2(or 3) pairs, sometimes alternate or unpaired, ovate to irregularly rhombic, 1–11 × 1–7 cm, smaller toward leaf base, apex rounded to acute; terminal lobe broadly triangular to broadly lanceolate, 5.5–15 × 5.5–15 cm, base hastate, cordate, truncate, or cuneate, margin often coarsely sinuate, apex acute. Upper stem leaves sessile or with a shorter winged petiole, smaller, less or not divided. Synflorescence narrowly paniculiform, with many capitula. Capitula with usually 10–15 florets. Involucre 9–11 × ca. 3 mm. Outer phyllaries ovate to lanceolate, longest ca. 4 × 1 mm, apex acute; inner phyllaries ± 8, apex obtuse to rounded. Florets purplish. Achene 4–5 mm, attenuate into a ca. 1 mm beaklike apex. Pappus 7–8 mm. Fl. and fr. May–Aug. $2n = 18$*.

Mountain slopes, thickets in mountain valleys, forests; 200–3200 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, ?Guizhou, ?Hainan, Hubei, Hunan, ?Jiangsu, Jiangxi, Sichuan, Taiwan, ?Xizang, Yunnan, Zhejiang [Japan, Vietnam].

Paraprenanthes sororia is the most widespread species of the genus and one of the two species distributed also outside China. Its circumscription and delimitation differ in the literature. *Paraprenanthes pilipes* and *P. sylvicola* have been considered either as specifically distinct or as conspecific, and *Lactuca diversifolia* (here treated as *P. diversifolia*) has been treated as a separate species and, more recently, as conspecific. This last species, however, clearly differs and is readily distinguished from *P. sororia* by its smaller capitula with only 5 inner phyllaries and 4–6 florets and by its endemic status in China. In contrast, *P. sylvicola* as treated in FRPS (80(1): 172. 1997), delimited by undivided leaves and glabrous upper stem portion, actually comprises

plants (or specimens) with undivided leaves of both *P. sororia* and *P. diversifolia*. The type of the name *P. sylvicola* represents *P. diversifolia*. Glandular hairy plants, which occur throughout the distribution range of *P. sororia*, were formally described as a variety (*Mycelis sororia* var. *pilipes*) from Japan and later upvalued to species rank as *P. pilipes*. However, the co-occurrence of entirely glabrous and apically glandular hairy plants is also known from other species in subtribe Lactucinae and is of no taxonomic value. *Paraprenanthes pilipes* is therefore treated as synonymous with *P. sororia*. *Paraprenanthes hastata*, with conspicuous undivided lanceolate to lanceolate-hastate middle stem leaves and glandular hairy upper stem portion, which is only known from the incomplete type material collected in Chongqing on Jinyun Shan, is here considered merely as a depauperate form of *P. sororia*. *Paraprenanthes luchunensis*, finally, combines two different elements, and we follow X. Zhuang (Fl. Yunnan. 13: 741. 2004) who included that name in the sense of its type in *P. sororia*; other collections cited in the protologue represent *P. polypodiifolia*.

8. Paraprenanthes diversifolia (Vaniot) N. Kilian, **comb. nov.**

林生假福王草 lin sheng jia fu wang cao

Basionym: *Lactuca diversifolia* Vaniot, Bull. Acad. Int. Géogr. Bot. 12: 245. 1903; *Paraprenanthes gracilipes* C. Shih; *P. sylvicola* C. Shih; *Prenanthes diversifolia* (Vaniot) C. C. Chang (1934), not Ledebour ex Sprengel (1826).

Herbs 0.5–1.5 m tall, annual. Stem glabrous or apically glandular hairy. Lower stem leaves with petiole 4–9 cm, slender cuneately winged, base not clasping; leaf blade triangular, triangular-ovate, or broadly lanceolate, 7–18 × 4–24 cm, usually undivided, glabrous or sparsely glandular hairy, base cuneate, truncate, cordate, or hastate, margin sinuate and mucronately dentate, apex acute. Middle and upper stem leaves with a shorter narrow to broader winged petiole; leaf blade with a rather cuneate base, undivided and otherwise similar to lower leaves or lyrately pinnatipartite to lyrately pinnatisect; lateral lobes if present 1 or 2(or 3) pairs, triangular-ovate to elliptic; terminal lobe triangular-ovate to lanceolate, apex acute. Uppermost leaves sessile, elliptic to narrowly rhombic, undivided, base narrow and not clasping, apex acute. Synflorescence narrowly paniculiform, with some to numerous capitula. Capitula with 4–6 florets. Involucre 10–11 × 1.5–2 mm. Outer phyllaries ovate-triangular to lanceolate, largest ca. 3 × 0.5 mm, apex acute; inner phyllaries 5, apex acute to obtuse. Florets purplish red to sometimes whitish. Achene ca. 4 mm, attenuate into an almost beaked apex. Pappus 5–6 mm. Fl. and fr. Feb–Aug.

● Mountain valleys, forests; 500–2500 m. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

Paraprenanthes diversifolia has often not been recognized properly in the past but confused with *P. sororia*. However, it is very well characterized by its small capitula with only 5 inner phyllaries and 4–6 florets. In contrast, leaf shape and indumentum do not actually distinguish it from *P. sororia* (see also note there) and *P. pilipes*.

9. Paraprenanthes heptantha C. Shih & D. J. Liu, Acta Phytotax. Sin. 26: 423. 1988.

雷山假福王草 lei shan jia fu wang cao

Herbs 0.8–2 m tall, annual. Stem glabrous. Basal leaves unknown. Lower and middle stem leaves with petiole 2.5–10 cm, ± unwinged; leaf blade narrowly elliptic, 12–24 × 8.5–13 cm, lyrately pinnatipartite or unequally pinnatipartite, margin sinuate and mucronulate-dentate; lateral lobes 3 or 4 pairs, opposite or alternate, elliptic, triangular, or irregularly rhombic, apex obtuse to rounded; terminal lobe irregularly rhombic, lanceolate, or narrowly triangular. Upper stem leaves shortly petiolate; leaf blade linear-elliptic, ca. 10 × 1.3 cm, base cuneate, apex acuminate, otherwise similar to middle stem leaves. Synflorescence narrowly paniculiform, with many capitula. Capitula with 7 or 8 florets. Involucre ca. 9 × 2 mm. Outer phyllaries triangular-ovate to lanceolate, largest ca. 3 × 1 mm, apex acute; inner phyllaries 5, apex obtuse. Florets bluish purple. Achene ca. 4 mm, attenuate into an almost beaked apex. Pappus ca. 5 mm. Fl. and fr. May–Jul.

● Grasslands on mountain slopes, forests; 600–1200 m. Guangxi, Guizhou (Leishan), Hunan, Jiangsu, Sichuan.

Paraprenanthes heptantha shows affinities to *P. diversifolia*, and future studies should assess the delimitation between both species.

10. Paraprenanthes dolichophylla (C. Shih) N. Kilian & Z. H. Wang, **comb. nov.**

长叶假福王草 chang ye jia fu wang cao

Basionym: *Notoseris dolichophylla* C. Shih, Acta Phytotax. Sin. 27: 459. 1989.

Herbs ca. 45 cm tall, perennial. Stem densely glandular hairy. Basal and lower stem leaves unknown. Middle stem leaves with petiole 1–1.5 cm, unwinged; leaf blade obovate to narrowly oblanceolate, 20–22 × 4–13 cm, pinnatisect to subpinnatisect, glabrous, margin sinuate to sublobate and mucronulately dentate; lateral lobes 4–7 pairs, opposite or alternate, sometimes petiolulate, ± narrowly elliptic, longest pair each 2.5–8 × 1–2.5 cm, decreasing in size toward base and if more than 4 pairs also toward leaf apex, lowermost pair smallest; terminal lobe elliptic to narrowly elliptic, apex acute to acuminate. Synflorescence paniculiform, with numerous capitula. Capitula with ca. 5 florets. Involucre 9–10 × 2–3 mm. Outer phyllaries ovate to lanceolate, largest ca. 3 × 1 mm, apex acute; inner phyllaries 5, linear-lanceolate, equal in length, apex obtuse. Florets purple. Achene 4–5 mm. Pappus ca. 7 mm. Fl. May.

● Forests on mountain slopes; 1600–1700 m. Sichuan (Tianquan).

Paraprenanthes dolichophylla was originally described on the basis of flowering material only. Recently collected material with ripe achenes revealed that the species is a member of *Paraprenanthes*, which has also been supported by the molecular analysis of that material.

11. Paraprenanthes multiformis C. Shih, Acta Phytotax. Sin. 26: 420. 1988.

三裂假福王草 san lie jia fu wang cao

Herbs 40–90 cm tall, annual. Stem apically densely glandular hairy. Basal leaves unknown. Middle stem leaves with petiole 3–10 cm, unwinged, basally not widened; leaf blade triangular-ovate, 6–8 × 5–7 cm, 3-lobed or 3-parted, base cordate, margin ± sinuate and mucronulately dentate; lateral lobes tri-

angular-ovate to semiorbicular, somewhat smaller or ± equal in size to terminal lobe, apex rounded to acute; terminal lobe ± triangular-ovate, apex acute. Upper stem leaves with petiole shorter and ± winged; leaf blade triangular, smaller and less divided than in middle stem leaves or not divided, base cuneate, apex acuminate. Uppermost leaves lanceolate, triangular-lanceolate, or narrowly elliptic, pilose as upper stem, margin dentate or entire, apex acuminate. Synflorescence narrowly paniculiform, with some to many capitula. Capitula with usually 10–15 florets. Involucre 9–11 × ca. 3 mm. Outer phyllaries triangular-ovate to lanceolate, largest 2–3 × ca. 1 mm, apex acute; inner phyllaries 8, apex ± obtuse. Florets reddish. Achene ca. 4 mm, attenuate into an almost beaked apex. Pappus ca. 6 mm. Fl. and fr. May–Aug.

● Forests, forest margins; 600–800 m. Fujian, Hunan (Zhijiang), Jiangxi, Sichuan.

12. Paraprenanthes longiloba Y. Ling & C. Shih, Acta Phytotax. Sin. 26: 421. 1988.

狭裂假福王草 xia lie jia fu wang cao

Herbs, annual. Stem glabrous. Basal leaves unknown. Middle stem leaves sessile, 3-parted; lateral lobes 1 pair, broadly linear-lanceolate, very small; terminal lobe narrowly linear, to 20 × 1 cm, margin subundulate or inconspicuously dentate, apex long acuminate. Upper stem leaves gradually smaller, similar to middle stem leaves. Synflorescence paniculiform, with numerous capitula. Capitula with usually 8–12 florets. Involucre 9–11 × ca. 3 mm. Outer phyllaries triangular-ovate to linear-lanceolate, largest 3–4 × ca. 0.5 mm, apex acute; inner phyllaries 8, apex obtuse. Florets purple. Achene 4.5–5 mm, attenuate into an almost beaked apex. Pappus 5–6 mm. Fl. and fr. Jul.

● Mountain slopes; ca. 2000 m. Yunnan (Kunming).

60. NOTOSERIS C. Shih, Acta Phytotax. Sin. 25: 196. 1987.

紫菊属 zi ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, perennial. Stem erect, rarely scandent and ± zigzag, branched apically, glabrous or glandular hairy, leafy. Leaves pinnately lobed, more rarely undivided. Synflorescence with few to numerous capitula and capillaceous branchlets. Capitula pendent at anthesis, with 3–12 florets; peduncle capillaceous. Involucre narrowly cylindric. Phyllaries often tinged purple; outer phyllaries few, gradually longer centripetally, longest ca. 1/2 as long as inner ones; inner phyllaries 3(or 4), 5, or ca. 8, ± equal in length, ± linear-lanceolate to linear. Receptacle naked. Florets some shade of purple. Achene usually purplish to brownish red, cylindric to subfusiform, compressed, with 5 main ribs and 2 secondary ribs in between, apex truncate. Pappus white, single, of slender scabrid bristles.

About 11 species: China, Himalayan region; ten species (eight endemic) in China.

1a. Herbs scandent; stem ± zigzag.
2a. Inner phyllaries ca. 8; capitula with 10–12 florets ..... 1. *N. yakoensis*
2b. Inner phyllaries 4 or 5; capitula with 5–8 florets ..... 2. *N. scandens*
1b. Herbs not scandent; stem straight, erect.
3a. Inner phyllaries 3 or 4; capitula with 3 or 4 florets; base of petiole often expanded and auriculately clasping .... 10. *N. triflora*
3b. Inner phyllaries 5; capitula with 4–6 florets; base of petiole never expanded and clasping.
4a. Blade of lower and middle stem leaves not divided.
5a. Lower and middle stem leaves hastate-triangular to rhombic; involucre at anthesis and in fruit less than 1.2 cm ..... 3. *N. nanchuanensis*
5b. Lower and middle stem leaves ovate to triangular-ovate; involucre at anthesis and in fruit 1.2–1.5 cm.
6a. Middle stem leaves narrowly ovate, base cuneate, petiole winged; upper stem leaves sessile ..... 4. *N. guizhouensis*
6b. Middle stem leaves ovate to triangular-ovate, base cordate, truncate, or cuneate, petiole unwinged; upper stem leaves shortly petiolate ..... 6. *N. macilenta*
4b. Blade of lower and middle stem leaves pinnately lobed.
7a. Terminal lobe of lower and middle stem leaves narrowly elliptic to lanceolate, always much exceeded in width by upper pair of lateral lobes separated by winged or unwinged rachis ..... 8. *N. porphyrolepis*
7b. Terminal lobe of lower and middle stem leaves ovate, triangular-ovate, or broadly rhombic, not or slightly exceeded in width by upper pair of lateral lobes separated by winged or unwinged rachis.
8a. Involucre at anthesis ca. 1.2 cm and in fruit to 1.6 cm ..... 7. *N. melanantha*
8b. Involucre at anthesis and in fruit 0.9–1.2 cm.
9a. Involucre at anthesis ca. 1 cm and in fruit to 1.2 cm; achene basally more attenuate than apically; pappus not distinctly exceeding involucre in fruit ..... 5. *N. yunnanensis*
9b. Involucre at anthesis ca. 0.9 cm and in fruit to 1 cm; achene apically more attenuate than basally; pappus distinctly exceeding involucre in fruit ..... 9. *N. wilsonii*

1. Notoseris yakoensis (Jeffrey) N. Kilian, **comb. nov.**

垭口紫菊 ya kou zi ju

Basionym: *Prenanthes yakoensis* Jeffrey, Notes Roy. Bot. Gard. Edinburgh 5: 203. 1912; *P. volubilis* Merrill.

Vines 3–4 m, herbaceous, perennial. Stem scandent, ± zigzag, flexible, apically branched and glandular hairy, leafy. Stem leaves with petiole 1–3 cm, unwinged, ± glandular hairy, basally not widened; leaf blade triangular-ovate to lanceolate, 4–15 × 2–6 cm, both surfaces ± glandular hairy, base cordate to hastate, margin mucronately dentate, apex acuminate. Synflorescence terminal and in axils of upper leaves, divaricately paniculiform, with few to several capitula. Capitula with usually 10–12 florets; peduncle usually less than 1 cm. Involucre 1.1–1.4 × 0.3–0.5 cm. Phyllaries tinged purplish red; outer phyllaries ovate to lanceolate, largest 5–6 × ca. 1 mm, glandular hairy, apex acute to obtuse; inner phyllaries ca. 8, glabrous to sparsely glandular hairy, apex rounded to obtuse. Florets purplish red. Achene pale to dark purple, cylindric to subfusiform, 4–5 mm, basally more attenuate than apically, somewhat attenuate below pappus disk. Pappus ca. 8 mm. Fl. and fr. Aug–Dec.

Forests, forest margins; 1300–2800 m. Yunnan [N Myanmar].

2. Notoseris scandens (J. D. Hooker) N. Kilian, **comb. nov.**

藤本紫菊 teng ben zi ju

Basionym: *Prenanthes scandens* J. D. Hooker in Bentham & J. D. Hooker, Gen. Pl. 2: 527. 1873.

Vines, herbaceous, perennial. Stem scandent, ± zigzag, flexible, apically branched and glandular hairy, leafy. Stem leaves with petiole 1–4 cm, unwinged, glandular hairy, basally not widened; leaf blade ovate, triangular-ovate, or lanceolate, 4–15 × 2–4[–7] cm, both surfaces ± glandular hairy, margin mucronately dentate, apex acuminate. Synflorescence terminal and in axils of upper leaves, divaricately corymbosely paniculiform, with several to many capitula. Capitula with usually 5–8 florets; peduncle usually less than 1 cm. Involucre 11–14 × 2–3 mm. Phyllaries tinged purplish red; outer phyllaries ovate to linear-lanceolate, largest 4–6 × ca. 1 mm, glandular hairy, apex acute; inner phyllaries 4 or 5, glabrous or sparsely glandular hairy, apex acute. Florets blue [?or dull violet to reddish purple]. Achene pale [?to dark purple], cylindric to subfusiform, 4–5 mm, basally more attenuate than apically, somewhat attenuate below pappus disk. Pappus ca. [0.7–]1 cm. Fl. and fr. Nov–Dec.

Forests, forest margins; 900–2000 m. Xizang, Yunnan [NE India].

3. Notoseris nanchuanensis C. Shih, Acta Phytotax. Sin. 27: 457. 1989.

金佛山紫菊 jin fo shan zi ju

Herbs 40–80 cm tall, perennial. Stem erect, branched apically, glabrous, leafy. Lower and middle stem leaves with petiole to 5 cm, winged, basally not widened and not clasping; leaf blade triangular to rhombic, 7–9.5 × 5.5–6 cm, undivided, base hastate to cuneate, margin mucronulately dentate, apex acuminate. Upper stem leaves similar to middle stem leaves or sessile, lanceolate to irregularly rhombic, 10–12 × 2–4 cm; uppermost leaves linear, 1.5–2.5 cm. Synflorescence narrowly paniculiform, with numerous capitula and capillaceous branches. Capitula with ca. 5 florets; peduncle capillaceous. Involucre ca. 10 × 2 mm. Phyllaries purple, abaxially glabrous; outer phyllaries ovate to lanceolate, largest ca. 3 × 1 mm, apex acute; inner phyllaries 5, apex obtuse to rounded. Florets purple. Achene subfusiform, ca. 5 mm. Pappus ca. 7 mm. Fl. and fr. Aug–Sep.

● Mountain slopes; 1500–2000 m. Chongqing (Nanchuan).

4. Notoseris guizhouensis C. Shih, Acta Phytotax. Sin. 25: 196. 1987.

全叶紫菊 quan ye zi ju

Herbs. Stem solitary, erect, branched apically, glabrous, leafy. Middle stem leaves with petiole to 10 cm, distinctly winged, basally not widened and not clasping; leaf blade narrowly ovate, to 10 × 4.5 cm, undivided, base cuneate, margin mucronulately dentate, apex acuminate. Upper stem leaves sessile, narrowly elliptic, lanceolate, or narrowly elliptic-lanceolate, 8.5–17 × 1.5–4.5 cm. Synflorescence paniculiform, with numerous capitula and capillaceous branches. Capitula with ca. 5 florets; peduncle capillaceous. Involucre 12–14 × 2–3 mm. Phyllaries purplish red, abaxially glabrous; outer phyllaries broadly ovate to lanceolate, largest ca. 5 × 1–1.5 mm, apex obtuse to acute; inner phyllaries 5. Florets purplish red. Achene subfusiform. Pappus ca. 8 mm. Fl. and fr. Sep. $2n = 18$*.

● Mountain slopes, shaded and moist areas by trails, thickets; ca. 2000 m. Chongqing, Guizhou (Pu'an).

5. Notoseris yunnanensis C. Shih, Acta Phytotax. Sin. 25: 200. 1987.

云南紫菊 yun nan zi ju

Herbs, 1–2.7 m tall. Stem solitary, erect, branched apically, glabrous, leafy. Middle stem leaves glabrous; petiole 5–20 cm, unwinged; leaf blade ovate, 16–22 × 12–15 cm, lyrately pinnatisect, margin mucronulately dentate; lateral lobes 1–3 pairs, narrowly elliptic, 6–10 × 2–5 cm, apex obtuse; terminal lobe rhombic to elliptic, 10–13 × 4–10 cm, base cuneate, apex acuminate. Upper stem leaves with shorter petiole to sessile, usually smaller and less divided to undivided, otherwise similar to middle stem leaves. Synflorescence paniculiform, with numerous capitula. Capitula with 4 or 5 florets. Involucre ca. 10 × 2.5–3 mm at anthesis, to 1.2 cm in fruit. Phyllaries purplish red, abaxially glabrous, apex obtuse; outer phyllaries linear-lanceolate to narrowly elliptic, largest 4–6 × ca. 1 mm; inner phyllaries 5. Florets purple. Achene ca. 5 mm, basally more attenuate than apically. Pappus 7–8 mm. Fl. and fr. Sep–Oct.

● Dense forests; 1200–2200 m. S Yunnan (Yanshan).

6. Notoseris macilenta (Vaniot & H. Léveillé) N. Kilian, **comb. nov.**

光苞紫菊 guang bao zi ju

Basionym: *Prenanthes macilenta* Vaniot & H. Léveillé, Bull. Soc. Bot. France 53: 550. 1906; *Notoseris psilolepis* C. Shih.

Herbs 30–130 cm tall, perennial. Stem solitary, erect, branched apically, glabrous or glandular hairy, leafy. Basal, lower, and middle stem leaves with petiole 8–25 cm, unwinged, basally not or slightly widened; leaf blade ovate, triangular-ovate, or more rarely suborbicular, 7–30 × 4.5–23 cm, adaxially ± glandular hairy, base cordate, truncate, or cuneate, margin mucronulately dentate, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but smaller and with petiole shorter and often apically cuneately winged; leaf blade triangular to narrowly rhombic, basally usually cuneate, apically acute to acuminate. Uppermost leaves sessile, narrowly rhombic to narrowly elliptic, base cuneate, apex acuminate. Synflorescence paniculiform, with numerous capitula. Capitula with 5 florets. Involucre ca. 12 × 2–3 mm at anthesis, ca. 1.5 cm in fruit. Phyllaries purple, abaxially glabrous; outer phyllaries triangular-ovate to linear-lanceolate, longest ca. 7 × 1 mm; inner phyllaries 5, apex acute. Florets purplish red. Achene 5–6 mm, basally more attenuate than apically. Pappus 8–9 mm. Fl. and fr. Sep–Nov.

● By water in mountain valleys, forests; 800–2300 m. Chongqing, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Yunnan.

The name *Prenanthes macilenta* predates the previously accepted name *Notoseris psilolepis*. *Notoseris macilenta* is closely related to *N. melanantha* and is distinguished by its leaves undivided throughout.

7. Notoseris melanantha (Franchet) C. Shih, Acta Phytotax. Sin. 25: 198. 1987.

黑花紫菊 hei hua zi ju

Lactuca melanantha Franchet, J. Bot. (Morot) 9: 291. 1895; *Notoseris formosana* (Kitamura) C. Shih; *N. gracilipes* C. Shih; *N. henryi* (Dunn) C. Shih; *N. rhombiformis* C. Shih; *Prenanthes formosana* Kitamura; *P. henryi* Dunn.

Herbs 0.5–2 m tall, perennial. Stem solitary, erect, apically branched and glabrous or glandular hairy, leafy. Lower and middle stem leaves with petiole 3–17 cm, ± unwinged, basally not widened; leaf blade pinnatipartite to pinnatisect or lyrately so, rarely some leaves undivided, margin mucronulately dentate (sometimes very coarsely so) and sometimes ± sinuate; lateral lobes 1–3 pairs, opposite to subopposite, elliptic, irregularly rhombic, or obovate, 1–10 × 0.5–6 cm, base truncate, cuneate, or subpetiolulate, apex obtuse to acute; terminal lobe broadly elliptic, triangular-ovate, or rhombic, 4–22 × 3–20 cm, base cordate, truncate, or cuneate, apex obtuse, rounded, or acute. Upper stem leaves similar to middle stem leaves but with shorter petiole to sessile, smaller and less or not divided. Synflorescence narrowly paniculiform, with numerous capitula. Capitula with 5(or 6) florets. Involucre ca. 12 × 2–3 mm at anthesis, to 1.6 cm in fruit. Phyllaries purplish, abaxially glabrous; outer phyllaries triangular, linear-elliptic, or lanceolate, largest 4–6 × 1–1.5 mm, apex acute; inner phyllaries 5, apex ± rounded. Florets bluish purple to pink. Achene 4–6 mm, basally more attenuate than apically. Pappus 7–9 mm. Fl. and fr. Jun–Dec. $2n = 18$*.

● Forests, forest margins; 1300–2700 m. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Taiwan, Yunnan.

Notoseris melanantha is here treated in a wide sense, including several other species previously distinguished only by rather subtle leaf and indumentum features. As here treated, it is well characterized by its pinnatipartite to pinnatisect leaves with a broad, triangular to triangular-ovate or broadly rhombic terminal lobe and its 1.2–1.6 cm involucres with 5 inner phyllaries. Comparing the type material of *N. melanantha* and *N. henryi*, which were apparently described independently of each other a few years apart, with a larger number of specimens referable to either of them, it becomes evident that a continuous variation in leaf shape closely knits all of these specimens. The rich type material of *N. melanantha* represents a form with pinnatipartite to pinnatisect lower and middle stem leaves, the rachis of which is distinctly to broadly winged at least between the broad, triangular-ovate terminal lobe and the upper pair of lateral lobes and narrowly winged to unwinged between the pairs of lateral lobes, and the lateral lobes of which have a broad base. The syntypes of *N. henryi*, *A. Henry 7022* and *A. Henry 11214*, in contrast, have pinnatisect lower and middle stem leaves with usually unwinged rachis, lateral lobes with narrow or even subpetiolulate base, and a broad, triangular-ovate to rhombic terminal lobe. This latter leaf shape appears to be much more common. As *N. melanantha* predates the name *N. henryi* for a few years, the former is the correct name for the commonest and most widespread *Notoseris* species. Three further species, *N. formosana*, *N. gracilipes*, and *N. rhombiformis*, apparently each represent only part of this continuous variation, making their delimitation practically impossible. Of these, *N. rhombiformis* refers to plants with a broad, distinctly rhombic terminal lobe separated by the unwinged rachis from the uppermost pair of lateral lobes, a form also represented by the syntype *A. Henry 11214* and approximately by part of the material of the syntype *A. Henry 7022* of *N. henryi*, while *N. gracilipes* and *N. formosana* refer to pinnatisect-leafy plants with a broadly triangular terminal lobe and were moreover distinguished by indumentum characters.

8. Notoseris porphyrolepis C. Shih, Acta Phytotax. Sin. 25: 201. 1987.

南川紫菊 nan chuan zi ju

Herbs 0.7–1.5 m tall, perennial. Stem solitary, erect, branched apically, glabrous, leafy. Basal and middle stem leaves with petiole ca. 4.5 cm, unwinged, basally not widened; leaf blade pinnatipartite to subpinnatisect, margin mucronulately dentate and lobe margin mucronate or with 1 large triangular tooth on one side; lateral lobes 2 or 3 pairs, narrowly elliptic to narrowly rhombic, 3–4 × 1–1.5 cm, base truncate, apex acute to acuminate; terminal lobe narrowly elliptic to obliquely narrowly elliptic, 3–4 × 1–1.5 cm, apex acute to acuminate. Upper stem leaves narrowly elliptic to narrowly elliptic-lanceolate, ca. 5.5 × 1 cm, undivided, apex acuminate. Synflorescence paniculiform, with numerous capitula. Capitula with ca. 5 florets. Involucre 13–15 × 2–3 mm. Phyllaries purple, abaxially glabrous, apex rounded to obtuse; outer phyllaries lanceolate to linear-lanceolate, longest ca. 6 × 1–1.5 mm; inner phyllaries 5. Florets purple. Achene ca. 5 mm, basally more attenuate than apically. Pappus ca. 8 mm. Fl. and fr. Sep. $2n = 18$*.

● Forests on mountain slopes; 1800–1900 m. Chongqing (Nanchuan), Guizhou.

Notoseris porphyrolepis is closely related to *N. melanantha* and mainly distinguished by the leaf shape, as given in the key.

9. Notoseris wilsonii (C. C. Chang) C. Shih, Acta Phytotax. Sin. 25: 202. 1987.

峨眉紫菊 e mei zi ju

Prenanthes wilsonii C. C. Chang, Bull. Fan Mem. Inst. Biol., Bot. 5: 322. 1934.

Herbs to 1 m tall, perennial. Stem erect, apically branched and glandular hairy, basally glabrous, leafy. Lower and middle stem leaves with petiole 3.5–8 × 2–2.5 cm, ± unwinged and base slightly widened in lower leaves, narrowly winged and base sometimes somewhat auriculately widened in middle leaves; leaf blade pinnatipartite to pinnatisect and sometimes lyrately so, margin ± sinuate and mucronulately dentate and sometimes sublobately so; lateral lobes 1–4 pairs, opposite or alternate, sessile to subpetiolulate, ovate, triangular-ovate, or elliptic, 1–7 × 1–4 cm, often unequal, upper ones sometimes subdividing terminal lobe; terminal lobe triangular, triangular-ovate, or rhombic, 7–12 × 3–10 cm, base truncate to cuneate, margin sometimes lobulate, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but sessile or with shorter usually broader winged petiole, sometimes smaller and fewer. Synflorescence paniculiform, with numerous capitula. Capitula with 4 or 5 florets. Involucre 9–10 × ca. 2 mm. Phyllaries purple, glabrous; outer phyllaries triangular-ovate to linear-lanceolate, largest 4–5 mm; inner phyllaries 5. Florets purplish blue. Achene 4–6 mm, apically usually more attenuate than basally. Pappus 6–7 mm, exserted from involucre at maturity. Fl. and fr. May–Jul.

● Forests, forest margins; 1000–2800 m. Sichuan (Emei Shan, Wenchuan).

10. Notoseris triflora (Hemsley) C. Shih, Acta Phytotax. Sin. 25: 202. 1987.

三花紫菊 san hua zi ju

Lactuca triflora Hemsley, J. Linn. Soc., Bot. 23: 485. 1888; *Prenanthes triflora* (Hemsley) C. C. Chang.

Herbs, to 1 m tall, perennial. Stem solitary, erect, branched apically, sparsely glandular hairy, leafy. Lower and middle stem leaves with petiole to 17 cm, narrowly winged, basally usually slightly widened; leaf blade lyrately pinnatipartite to subpinnatisect, margin ± sinuate and mucronulately dentate; lateral lobes 1 or 2(or 3) pairs, ± elliptic, 2–6 × 1–4 cm, base cuneate to petiolulate, apex rounded to obtuse; terminal lobe triangular to triangular-ovate, 12–19 × 11–20 cm, base shallowly cordate, hastate, cuneate, or rounded, apex acuminate to acute. Upper stem leaves with petiole shorter, basally slightly widened, or distinctly widened and ± auriculately clasping or ± sessile and auriculately clasping; leaf blade smaller and often less divided, otherwise similar to middle stem leaves; uppermost leaves narrowly elliptic, narrowly rhombic, or broadly linear, undivided. Synflorescence paniculiform, with numerous capitula. Capitula with 3 or 4 florets. Involucre 10–12 × 1.5–2 mm. Phyllaries purple, glabrous; outer phyllaries narrowly ovate to linear-lanceolate, longest ca. 5 × 1 mm, apex acute; inner phyllaries 3 or 4, apex obtuse to acute. Florets bluish purple. Achene 4–5 mm, basally more attenuate than apically. Pappus ca. 7 mm. Fl. and fr. Jul–Oct. $2n = 18$*.

● Grasslands, forests; 1400–3000 m. Chongqing, Sichuan (Emei Shan), Yunnan (Tengchong).

Notoseris triflora seems to have a scattered, disjunct distribution in C and SW China. It is apparently closely related to **Notoseris khasiana** (C. B. Clarke) N. Kilian, **comb. nov.** (basionym: *Prenanthes khasiana* C. B. Clarke, Compos. Ind. 273. 1876), which has a scattered distribution in NW Myanmar, NE India (Assam), and perhaps Bhutan. The available material of *N. triflora* shows some variation with respect to leaf shape; therefore, a comparative study of its disjunct populations, as well as those of *N. khasiana*, would be desirable.

61. LACTUCA Linnaeus, Sp. Pl. 2: 795. 1753.

莴苣属 wo ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Agathyrsus D. Don; *Lactucopsis* Schultz Bipontinus ex Visiani; *Lagedium* Soják; *Mulgedium* Cassini; *Phaenixopus* Cassini; *Pterocypsela* C. Shih; *Scariola* F. W. Schmidt; *Steptorhamphus* Bunge.

Herbs, perennial or annual, more rarely subshrubs (only *Lactuca orientalis* in China). Stems usually leafy. Leaves pinnate or undivided. Capitula with 4–30 or more florets. Involucre narrowly cylindric. Phyllaries glabrous or hairy; outer phyllaries gradually longer centripetally, ± imbricate, often ca. 1/2 as long as inner phyllaries or even ± approaching them in length; inner phyllaries usually 3, 5, or 8, ± linear-lanceolate to linear, often of unequal length in fruit. Receptacle naked. Florets some shade of yellow or blue. Achene narrowly or broadly ellipsoid, body subcompressed to compressed, between 2 thicker or wider lateral ribs with 1 to several slender ribs on either side; beak usually present, stout, slender, or filiform. Pappus white or sometimes with a faint yellow tinge, single, of slender scabrid bristles [or double with an additional outer row of minute hairs].

Probably ca. 50–70 species: mostly in C and SW Asia, Europe, North America; 12 species (one endemic, one introduced) in China.

The circumscription of the genus is not yet settled, and species numbers given in the literature therefore vary greatly. The concept of the genus applied here on the basis of molecular and morphological studies by N. Kilian et al. (in prep.) is wider than the one adopted in FRPS (80(1): 233–239. 1997) and includes, as far as China is concerned, the former segregates *Mulgedium*, *Pterocypsela*, and *Scariola*.

1a. Subshrubs, stems whitish, rigid, and intricately and divaricately branched; stem leaf bases with linear auricles adnately long decurrent on stem; capitula with 4(or 5) florets ..... 8. *L. orientalis*
1b. Annual to perennial herbs, stems not as above; stem leaf bases never adnately decurrent on stem; capitula with usually 8–30 florets.
2a. Achene body strongly compressed with distinctly winged margin.
3a. Inner phyllaries 5(or 6); achene with 3(–5) prominent ribs on either side ..... 4. *L. raddeana*
3b. Inner phyllaries ca. 8; achene with 1(or 2) prominent rib(s) on either side.

4a. Leaves not clasping or scarcely clasping stem ..... 6. *L. indica*
4b. Middle and upper stem leaves distinctly clasping stem.
5a. Achene beak stout, 0.1–0.5 mm, apically pale ..... 5. *L. triangulata*
5b. Achene beak filiform, 2–3.5 mm, pale to greenish ..... 7. *L. formosana*
2b. Achene body strongly compressed to subcompressed but margin not winged.
6a. Achene subcompressed, very narrowly ellipsoid, apically attenuate or contracted into a stout 1–2 mm beak.
7a. Lower and middle stem leaves usually pinnately lobed, base usually narrowed and semiamplexicaul; achene with 5–7 prominent ribs on either side between marginal ribs, marginal ribs slightly thicker than other main ribs ..... 9. *L. tatarica*
7b. Lower and middle stem leaves entire or more rarely sinuate-dentate to pinnately lobed, base usually semiamplexicaul to auriculate; achene with 4 or 5 narrow ribs in middle third of either face and with very thick marginal ribs ..... 10. *L. sibirica*
6b. Achene compressed, apically contracted into a filiform (2–)4–12 mm beak.
8a. Beak of achene 10–12 mm, base with rodlike appendages; achene body with 1 rib on either side; involucre to 2.3 cm in fruit ..... 1. *L. undulata*
8b. Beak of achene to 5 mm, base without appendages; achene body with 3–9 ribs on either side; involucre to 1.6 cm in fruit.
9a. Florets blue; achene body with 3–5 ribs on each side.
10a. Lower leaves obovate to elliptic, always pinnately lobed with broader segments; capitula ca. 6 mm at anthesis, to 1.3 cm in fruit; achene beak white ..... 2. *L. dissecta*
10b. All leaves linear, margin entire or lower ones pinnately lobed with linear entire segments; capitula 9–10 mm at anthesis, to 1.6 cm in fruit; achene beak greenish ..... 3. *L. dolichophylla*
9b. Florets yellow; achene body with 5–9 ribs on each side.
11a. Stem leaves undivided, abaxially with smooth midrib; phyllaries usually erect in fruit; achene with 5–7 ribs on each surface ..... 11. *L. sativa*
11b. Stem leaves pinnately lobed, abaxially usually with prickly setose midrib; phyllaries usually reflexed in fruit; achene with 7–9 ribs on each surface ..... 12. *L. serriola*

1. Lactuca undulata Ledebour, Icon. Pl. 2: 12. 1830.

飘带果 piao dai guo

Lactuca undulata var. *albicaulis* C. H. An; *L. undulata* var. *pinnatipartita* Turczaninow.

Herbs 10–35 cm tall or more, annual. Stems solitary or few, erect, divaricately branched from base or higher up, glabrous. Leaves glaucous green to glaucous; lower and middle stem leaves oblanceolate to narrowly elliptic, 2–5 × 1–2 cm, glabrous, base clasping stem and auriculate, margin sinuate-dentate to pinnatisect; lateral lobes 2–6 pairs; terminal lobe lanceolate to elliptic. Upper stem leaves smaller and less or not divided; uppermost stem leaves linear-lanceolate, margin entire or subentire, apex acuminate. Capitula numerous, terminal, with 8–12 florets; peduncle wiry, usually shorter than capitulum. Involucre narrowly cylindric and 7–9 mm at anthesis, longish ovoid and to 2.3 × 0.5–0.6 cm in fruit. Phyllaries glabrous, with an apical purplish spot; outer phyllaries ovate to linear-lanceolate, longest ca. 3/4 as long as inner phyllaries, apex acute; inner phyllaries ca. 5, apex subobtuse to acute. Florets pale blue to purple. Achene body pale to dark brown, obovoid, ca. 3 mm, compressed, with 1 rib on either side; beak whitish, filiform, 1–1.2 cm, base with 2 rodlike pendent appendages. Pappus 4–5 mm. Fl. and fr. May–Sep. 2*n* = 18.

Moist areas on mountain slopes, mountain valleys; 500–2000 m. Xinjiang [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, SC Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

2. Lactuca dissecta D. Don, Prodr. Fl. Nepal. 164. 1825.

裂叶莴苣 lie ye wo ju

Lactuca auriculata Candolle.

Herbs ca. 40 cm tall, annual. Stem solitary, erect, simple or divaricately branched from base; branches slender, glabrous. Leaves glabrous, base sagittately to auriculately clasping stem. Lower and middle stem leaves obovate, spatulate, or elliptic, 3–7 × 1–3.5 cm, pinnatipartite to subpinnatisect, margin entire or sparsely dentate; lateral lobes 3–6 pairs, rhombic, flabelliform, or orbicular, apex rounded to acute; terminal lobe rhombic, apex acute. Upper stem leaves lanceolate to linear-lanceolate, smaller, less or not divided, apex acuminate. Synflorescence corymbiform, with some to numerous capitula. Capitula with ca. 15 florets; peduncle capillaceous, usually longer than capitulum. Involucre narrowly cylindric and ca. 6 mm at anthesis, longish ovoid and to 1.3 × 0.3–0.4 cm in fruit. Phyllaries abaxially purplish red, glabrous, apex acute; outer phyllaries ovate to linear-lanceolate, approaching inner phyllaries to 3/4 their length; inner phyllaries ca. 5. Florets blue to bluish purple [or pale yellowish]. Achene body pale brown to blackish, obovoid, ca. 2.5 mm, compressed, with 3 ribs on either side; beak white, filiform, 4–4.5 mm. Pappus 3–4 mm. Fl. and fr. Jun. 2*n* = 16.

Grasslands; ca. 2000 m. Xinjiang, ?Xizang [Afghanistan, Bhutan, India (Sikkim), Kashmir, Kazakhstan, Kyrgyzstan, Nepal, Pakistan, Tajikistan; SW Asia].

3. Lactuca dolichophylla Kitamura in H. Hara, Fl. E. Himalaya, 341. 1966.

长叶莴苣 chang ye wo ju

Mulgedium sagittatum Royle, Ill. Bot. Himal. Mts. 252, t. 61, f. 2. 1835; *Lactuca handeliana* S. Y. Hu; *L. longifolia* Candolle (1838), not Michaux (1803); *L. wallichiana* Tuisl, nom. illeg. superfl.

Herbs ca. 1 m tall, annual or biennial. Stem solitary, erect, paniculate apically, glabrous. Lower stem leaves linear to linear-lanceolate, undivided or pinnately lobed, base sagittately clasping stem, apex acuminate; lobes when present linear, apex acute. Upper stem leaves undivided, smaller, otherwise similar to lower leaves. Synflorescence paniculiform, with numerous capitula. Capitula with 12–20 florets; peduncle wiry. Involucre narrowly cylindric and 9–10 mm at anthesis, ovoid and to 1.6 × 0.8 cm in fruit. Phyllaries apically purplish red, abaxially glabrous, apex acute; outer phyllaries triangular-ovate to linear-lanceolate, approaching inner phyllaries to 3/4 their length; inner phyllaries ca. 5. Florets blue. Achene body dark brown, narrowly ellipsoid to obcolumnar, 4.5–5 mm, compressed, with 3–5 ribs on either side; beak greenish, filiform, 2.5–3 mm. Pappus 6–7 mm. Fl. and fr. Sep. 2*n* = 16.

Thickets; ca. 3200 m. Xizang, Yunnan [Afghanistan, Bhutan, India, Kashmir, Myanmar, Nepal, Pakistan].

4. Lactuca raddeana Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 19: 526. 1874.

毛脉翅果菊 mao mai chi guo ju

Lactuca alliariifolia H. Léveillé & Vaniot; *L. elata* Hemsley; *L. raddeana* var. *elata* (Hemsley) Kitamura; *L. vaniotii* H. Léveillé; *Prenanthes hieraciifolia* H. Léveillé; *Pterocypsela elata* (Hemsley) C. Shih; *P. raddeana* (Maximowicz) C. Shih.

Herbs 0.8–2 m tall, biennial or perennial. Roots ramose. Stem solitary, erect, basal half ± densely hispid, apical half glabrous and branched. Lower and middle stem leaves with basal portion cuneate or winged petiole-like, 2–10 cm; apical portion ovate, elliptic, or triangular, 5–16 × 2–8.5 cm, undivided, pinnatipartite, or lyrately pinnatipartite, ± hispid, margin dentate and coarsely sinuate-dentate; lateral lobes 1–3 pairs, elliptic, apex acute; terminal lobe triangular, ovate-triangular, or subrhombic, apex acute. Upper stem leaves with basal portion shorter, winged, and petiole-like to cuneate, apical portion ovate, elliptic, or lanceolate. Synflorescence narrowly paniculate, with numerous capitula on wiry branches. Capitula with 8–11 florets. Involucre cylindric, 8–10 mm at anthesis, 9–11 × 4–5 mm in fruit. Phyllaries often pale purplish red; outer phyllaries triangular-ovate to lanceolate, largest ca. 5 × 1–2 mm, apex obtuse; inner phyllaries 5(or 6), apex obtuse. Florets bright yellow. Achene 3–4 mm; body reddish to dark brown, ellipsoid, compressed, broadly winged, 1.5–2 mm wide, with 3(–5) prominent ribs on either side, apically contracted into a concolorous or apically pale stout 0.2–0.4 mm beak. Pappus 6–7 mm, ± caducous. Fl. and fr. May–Oct. 2*n* = 18.

Forests, forest margins, thickets, moist areas on mountain slopes, mountain valleys, fields, trailsides; 200–3000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan [Japan, Korea, E Russia, Vietnam].

Although the range of variation in leaf shape is considerable, plants with undivided leaves (formerly referred to as *Lactuca elata*) and those with pinnatipartite leaves represent extremes of a ± continuous variation and indicate a certain genetic plasticity in this respect. Probably the various leaf shapes are a response to environmental factors. It is also indicative that comparable variation in leaf shape can also be observed in *L. indica* and *L. formosana*.

5. Lactuca triangulata Maximowicz, Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 9: 177. 1859.

翼柄翅果菊 yi bing chi guo ju

Lactuca triangulata var. *sachalinensis* Kitamura; *Pterocypsela triangulata* (Maximowicz) C. Shih.

Herbs to 1 m tall or more, biennial or perennial. Roots ramose. Stem solitary, usually purplish red, erect, branched in apical half or third, glabrous. Lower and middle stem leaves ± glabrous, margin with unequal and triangular teeth; basal portion winged petiole-like, 6–13 cm, base broadly auriculately to hastately clasping stem; apical portion triangular, broadly ovate, or broadly ovate-cordate, 8.5–13 × 9–16 cm. Upper stem leaves similar to middle stem leaves or basally shortly cuneate or winged petiole-like and auriculately or sagittately clasping and apically elliptic to rhombic. Uppermost leaves with semiamplexicaul base. Synflorescence rather narrowly paniculiform, with numerous capitula. Capitula with 10–16 florets. Involucre cylindric, 1–1.1 cm at anthesis, to 1.5 × 0.5–0.6 cm in fruit. Outer phyllaries narrowly triangular to lanceolate, longest ca. 7 × 1 mm, apex acute; inner phyllaries 8, usually purplish red, apex acute to obtuse. Florets yellow. Achene 4–6 mm; body blackish, reddish, or dark brown, ellipsoid, compressed, broadly winged, 2–2.5 mm wide, with 1(or 2) prominent rib on either side, apically contracted into an apically pale stout 0.1–0.5 mm beak. Pappus 6–8 mm, caducous. Fl. and fr. Jun–Sep. 2*n* = 18.

Grasslands on mountain slopes, mountain forests, forest margins, trailsides; 700–1900 m. Hebei, Heilongjiang, Jilin, Liaoning, Shanxi [Japan, Korea, SE Russia].

6. Lactuca indica Linnaeus, Mant. Pl. 2: 278. 1771.

翅果菊 chi guo ju

Brachyramphus sinicus Miquel; *Lactuca amurensis* Regel & Maximowicz ex Regel; *L. brevirostris* Champion ex Bentham; *L. cavaleriei* H. Léveillé; *L. indica* f. *indivisa* (Maximowicz) H. Hara; *L. indica* f. *runcinata* (Maximowicz) Kitamura; *L. kouyangensis* H. Léveillé; *L. laciniata* (Houttuyn) Makino (1903), not Roth (1797); *L. squarrosa* (Thunberg) Miquel; *L. squarrosa* var. *dentata* Komarov; *L. squarrosa* f. *indivisa* Maximowicz; *L. squarrosa* var. *integrifolia* Komarov; *L. squarrosa* var. *laciniata* (Houttuyn) Kuntze; *L. squarrosa* f. *runcinata* Maximowicz; *L. squarrosa* var. *runcinatopinnatifida* Komarov; *Prenanthes laciniata* Houttuyn; *P. squarrosa* Thunberg; *Pterocypsela indica* (Linnaeus) C. Shih; *P. laciniata* (Houttuyn) C. Shih.

Herbs 0.4–2 m tall, annual or perennial. Roots narrowly thickened. Stem solitary, stout, erect, branched apically, glabrous. Lower and middle stem leaves 13–37 × 0.5–20 cm, glabrous, base semiamplexicaul to weakly amplexicaul, margin entire or sparsely dentate, apex obtuse to acuminate; shape and incision extremely variable; shape ranging from linear-lanceolate, linear-elliptic, lanceolate, spatulate, to elliptic; incision ranging from entire, pinnatifid, deeply pinnatifid, to bipinnatifid, with segments mostly narrow, linear, falcate, triangular-lanceolate, or

elliptic, apex acute to acuminate. Upper leaves smaller, linear-lanceolate, linear, or elliptic, less incised to entire. Synflorescence paniculiform to racemiform-paniculiform, with numerous capitula. Capitula with usually 20–30 florets. Involucre cylindric, 1–1.1 cm at anthesis, 1.2–1.5 × 0.6–0.8 cm in fruit. Phyllaries usually with a purplish margin, apex usually obtuse to rounded; outer phyllaries ovate to lanceolate, longest ca. 6 × 1.5–2 mm; inner phyllaries 8. Florets pale yellow, bluish purple on drying. Achene 3–5 mm; body reddish brown, dark brown, or blackish brown, ellipsoid, compressed, broadly winged, 1.2–2.5 mm wide, with 1 prominent rib on either side, apically contracted into an apically pale to greenish subfiliform 0.4–1.6 mm beak. Pappus 7–8 mm, caducous. Fl. and fr. Apr–Nov. 2*n* = 18*.

Mountain valleys, forests, forest margins, thickets, ravines, grasslands, fields, wastelands; 200–3000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Philippines, E Russia, Thailand, Vietnam; introduced elsewhere].

Lactuca indica is one of the commonest species of tribe Cichorieae in China. Leaf shape shows a similarly strong variation as that in *L. raddeana* and is in a quite similar way ± continuous. Leaf shape is therefore not suitable for species delimitation in this group of species. In China, *L. indica* also shows considerable variation in achene beak length; therefore, the differences with *L. formosana* are sometimes not so clear-cut. See note under the latter species.

7. Lactuca formosana Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 19: 525. 1874.

台湾翅果菊 tai wan chi guo ju

Lactuca morii Hayata; *L. sonchus* H. Léveillé & Vaniot; *Pterocypsela formosana* (Maximowicz) C. Shih; *P. sonchus* (H. Léveillé & Vaniot) C. Shih.

Herbs 0.5–1.5 m tall, annual or ?perennial. Roots ramose. Stem solitary, erect, loosely branched apically, ± hirsute, glabrescent. Lower and middle stem leaves with narrow petiole-like amplexicaul basal portion to 5 cm or with conspicuously expanded and semiamplexicaul base; leaf blade elliptic, lanceolate, or oblanceolate, 8–18 × 4–8 cm, hirsute, main rib echinulate, undivided and with coarsely dentate margin or pinnatifid with 2–5 pairs of elliptic to broadly falcate lateral lobes, faintly to strongly dentate on margin, and a lanceolate or triangular terminal lobe. Upper stem leaves similar to middle stem leaves, margin mostly ± entire. Synflorescence loosely corymbose, with ca. 10 to many capitula. Capitula with usually 25–30 florets. Involucre cylindric, 1–1.1 cm at anthesis, to 1.8 × 0.8 cm in fruit. Phyllaries acute to acuminate at apex; outer phyllaries broadly obovate to lanceolate, longest ca. 8 × 1–2 mm; inner phyllaries 8. Florets yellow. Achene 4.5–6.5 mm; body reddish brown, dark brown, or blackish brown, ellipsoid, compressed, broadly winged, 2–2.3 mm wide, with 1 prominent rib on either side, apically contracted into a usually pale to greenish filiform 2–3.5 mm beak. Pappus 7–8 mm, caducous. Fl. and fr. Apr–Nov. 2*n* = 18*.

● Grasslands on mountain slopes and in valleys, thickets or forests on mountain slopes, fields, along trails; 100–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Ningxia, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang.

Lactuca formosana is similar to *L. raddeana*, *L. triangulata*, and *L. indica*, and the leaf shape of *L. formosana* in mainland China shows some variation. Instead of the typically lyrate-pinnatifid leaves with irregularly incised to dentate margin, plants sometimes have narrow, weakly pinnatifid leaves more similar to those of *L. indica*. However, usually both species can be distinguished by the shape of the synflorescence (corymbiform in *L. formosana*, paniculiform to racemiform-paniculiform in *L. indica*) and the indumentum of stem and leaves (hirsute and with echinulate main rib in *L. formosana*, glabrous in *L. indica*). Conspicuous, occasionally occurring plants with all or most leaves undivided, as are sometimes the upper stem leaves in usually pinnately lobed plants, have been treated as a separate species, *Lactuca sonchus* or *Pterocypsela sonchus*, respectively (e.g., FRPS 80(1): 231. 1997), but are here considered as a mere form of *L. formosana*, easily recognizable by the distinctive long beak of this species.

8. Lactuca orientalis (Boissier) Boissier, Fl. Orient. 3: 819. 1875.

雀苣 que ju

Phaenopus orientalis Boissier, Voy. Bot. Espagne 2: 390. 1841; *Lactuca viminea* J. Presl & C. Presl var. *erostris* Regel; *Scariola orientalis* (Boissier) Soják.

Subshrubs (10–)20–60 cm tall, glabrous or subglabrous, spinescent, branched from base. Stems whitish, rigid, intricately and divaricately branched. Leaves glaucous green. Basal leaves rosulate, sinuate-dentate to pinnately lobed; lateral lobes 2–4 pairs, triangular, retrorse, apex acute. Stem leaves similar to basal leaves but smaller, less incised, and basally with linear auricles adnately long decurrent on stem. Capitulum solitary, terminal and pedunculate or lateral and sessile, with 4(or 5) florets; peduncle (when present) subulate, remaining as a spine after shedding of capitulum. Involucre narrowly cylindric, 7–10 mm at anthesis, to 1.5 cm in fruit. Phyllaries green to bluish purple; outer phyllaries ovate, abaxially pubescent; inner phyllaries 3(or 4), apex obtuse. Florets pale yellow. Achene 7–8 mm; body brownish, narrowly ellipsoid, 1–1.3 mm wide, with 5–7 ribs on either side; beak concolorous, stout, 2–3 mm. Pappus 7–8 mm, caducous. 2*n* = 18, 36.

Mountain slopes and scree, on clay or loamy soil, on lime deposits, on gravel, in dry ravines; below 3800 m. Xinjiang [Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan; SW Asia].

Lactuca orientalis reaches China apparently only in the extreme northwest. No material from China was seen; the description is based on material from outside of China and the habitat data is from Fl. URSS (29: 321. 1964).

9. Lactuca tatarica (Linnaeus) C. A. Meyer, Verz. Pfl. Casp. Meer. 56. 1831.

乳苣 ru ju

Sonchus tataricus Linnaeus, Mant. Pl. 2: 572. 1771; *Agathyrsus tataricus* (Linnaeus) D. Don; *Crepis charbonnelii* H. Léveillé; *Lactuca multipes* H. Léveillé & Vaniot; *Lagedium tataricum* (Linnaeus) Soják; ?*Mulgedium alatoicum* C. H. An; *M. roborovskii* Tzvelev; *M. runcinatum* Cassini; *M. tataricum* (Linnaeus) Candolle; *S. lactucoides* Bunge.

Herbs 15–60 cm tall, perennial, with a taproot, roots shoot bearing. Stem erect; branched apically, glabrous, leafy mainly in basal part. Leaves grayish green to glaucous, rigid, glabrous.

Lower and middle stem leaves elliptic, narrowly elliptic, or linear, 6–19 × 2–6 cm, narrowed toward base, pinnatisect, pinnatifid, or coarsely dentate, apex acute to obtuse; lateral lobes 2–5 pairs, subelliptic to triangular, margin entire, denticulate, or spinulose; terminal lobe lanceolate to narrowly triangular, margin entire, denticulate, or spinulose. Upper stem leaves similar to middle stem leaves but smaller and less incised. Synflorescence racemiform to corymbosely paniculiform, almost leafless, usually with numerous capitula. Capitula with ca. 20 florets. Involucre cylindric, 1.1–1.4 × 0.3–0.5 cm at anthesis, to 2 cm in fruit. Phyllaries usually tinged purplish red, glabrous, apex acute to obtuse; outer phyllaries ovate to lanceolate; inner phyllaries ca. 8. Florets usually purplish blue to blue, rarely white. Achene 5–6 mm; body dark gray, columnar to very narrowly ellipsoid, subcompressed, with 5–7 ribs on either side, apically attenuate or contracted into a concolorous or pale stout 1–2 mm beak. Pappus ca. 1 cm. Fl. and fr. Jun–Sep. 2*n* = 18.

Riverbanks and terraces, by lakes, meadows, by fields, consolidated sand dunes, gravelly places; 1200–4300 m. Gansu, Hebei, Henan, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Xinjiang, Xizang [Afghanistan, NW India, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, C and W Russia, Tajikistan, Uzbekistan; SW Asia, Europe, North America].

Lactuca tatarica is a very widespread and considerably variable species. *Mulgedium roborovskii* is considered not to exceed the variation of the species and is included here. *Mulgedium alatoicum* is tentatively included here from the insufficient original description, as no type material has been seen.

10. Lactuca sibirica (Linnaeus) Bentham ex Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 19: 528. 1874.

山莴苣 shan wo ju

Sonchus sibiricus Linnaeus, Sp. Pl. 2: 795. 1753; *Lagedium sibiricum* (Linnaeus) Soják; *Mulgedium kamtschaticum* Ledebour; *M. sibiricum* (Linnaeus) Lessing.

Herbs 50–100 cm tall, perennial, with a taproot. Stem usually pale purplish red, erect, branched apically, glabrous, regularly leafy. Leaves thin, glabrous, abaxially glaucous green, adaxially green. Lower and middle stem leaves sessile, lanceolate, narrowly elliptic-lanceolate, or narrowly oblong-lanceolate, 10–26 × 2–3 cm, undivided or more rarely sinuate-dentate to pinnately lobed, base attenuate, auriculately or sagittately clasping, margin entire to faintly denticulate, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but smaller. Synflorescence corymbiform to corymbosely paniculiform, with many capitula. Capitula with ca. 20 florets. Involucre cylindric, 0.9–1.3 cm. Phyllaries often purplish tinged or mottled; outer phyllaries triangular-ovate to lanceolate, apex acute; inner phyllaries ca. 8, apex subobtuse. Florets blue, rarely white. Achene brown to olive green, narrowly ellipsoid, ca. 4 mm, subcompressed, either marginal rib almost as thick as ca. 1/3 of achene diam., middle third with 4 or 5 narrow ribs on either side, apically attenuate or with a ca. 1 mm beak. Pappus 5–7 mm. Fl. and fr. Jul–Sep. 2*n* = 18*.

Forests, forest margins, meadows, riverbanks, moist places, by lakes; 300–2100 m. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Xinjiang [Japan, Kazakhstan, Korea, Mongolia, Russia; N and NE Europe].

11. Lactuca sativa Linnaeus, Sp. Pl. 2: 795. 1753.

莴苣 wo ju

Lactuca scariola Linnaeus var. *sativa* (Linnaeus) Moris.

Herbs 25–100 cm tall, annual or biennial. Stem solitary, whitish, yellowish green, or glaucous green, erect, branched apically, glabrous. Leaves green, glabrous, rather soft. Basal and lower stem leaves sessile, oblanceolate to elliptic-oblanceolate, 6–15 × 1.5–6.5 cm, undivided, base cordate to sagittate and semiamplexicaul, margin sinuate-dentate, apex acute, acuminate, or rounded. Upper stem leaves similar to lower stem leaves or lanceolate, smaller; uppermost leaves ovate, very small, base cordate to sagittate and clasping, margin entire. Synflorescence corymbosely paniculiform, with very numerous capitula. Capitula with usually 10–30 florets. Involucre narrowly cylindric and 0.9–1.3 cm at anthesis, ovoid and ca. 6 mm in diam. in fruit. Phyllaries green to pale yellowish green, glabrous, usually erect in fruit, apex obtuse; outer phyllaries broadly triangular to lanceolate, approaching inner phyllaries in length; inner phyllaries ca. 8. Florets yellow. Achene body pale brown, narrowly obovoid, ca. 4 mm, compressed, with 5–7 ribs on either side; beak white, filiform, 2–4 mm. Pappus 3–4 mm. Fl. and fr. Feb–Sep. 2*n* = 18*.

Cultivated throughout China [probably originating from E Mediterranean to SW Asia].

Lactuca sativa was first known in cultivation in ancient Egypt. It is widely cultivated as a vegetable in China. Leaves of the species contain Vitamins A, B9, C, and K and can be eaten as a salad. *Lactuca sativa* has many cultivars, which are usually treated as varieties. *Lactuca sativa* var. *angustata* Irish ex Bremer is the most commonly cultivated variety in China, where the thick stems are cooked as a vegetable.

12. Lactuca serriola Linnaeus, Cent. Pl. 2: 29. 1756.

野莴苣 ye wo ju

Lactuca altaica Fischer & C. A. Meyer; *L. scariola* Linnaeus.

Herbs 50–80 cm tall, annual. Stem solitary, pale, erect, usually branched only apically, glabrous or prickly setose in basal part. Leaves rather rigid, usually held in vertical plane in sunshine, midrib abaxially often prickly setose. Lower and middle stem leaves oblanceolate to narrowly elliptic, 3–7.5 × 1–4.5 cm, pinnatifid, pinnatisect, or more rarely not divided and leaf broadly linear, base auriculately clasping, margin spinulose; lateral lobes usually 3–6 pairs, truncate, falcate, triangular-falcate, or ovate-falcate; terminal lobe triangular-ovate, rhombic, or broadly linear. Uppermost stem leaves smaller, otherwise similar to middle stem leaves or lanceolate, linear-lanceolate, or linear, margin entire. Synflorescence paniculiform and much branched to almost racemiform in meager plants, with numerous capitula. Capitula with 15–25 florets. Involucre narrowly cylindric and 8–10 mm at anthesis, ovoid and ca. 6 mm in diam. in fruit. Phyllaries usually reflexed in fruit, apex acute; outer phyllaries ovate to lanceolate, approaching inner phyllaries in length; inner phyllaries ca. 8. Florets yellow. Achene body pale brown, narrowly obovoid, ca. 3.5 mm, compressed, with 7–9 ribs on either side; beak whitish, filiform, 3.5–5 mm. Pappus ca. 5 mm, ± caducous. Fl. and fr. Jun–Aug. 2*n* = 18.

Wastelands, roadsides, gravel areas on floodplains, rock crevices, grasslands on mountain slopes, mountain valleys; 500–2000 m. Taiwan (introduced), Xinjiang [Afghanistan, N India, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, W Russia, Tajikistan; N and NE Africa, SW Asia, Europe].

Because molecular analyses supported the earlier assumptions on morphological grounds that *Lactuca altaica* cannot be delimited from *L. serriola* they are treated as conspecific.

Lactuca serriola was first recorded in Taiwan in 2007 (C. M. Wang & C. H. Chen, Taiwania 55: 331–333. 2010) and seems to be naturalized there. It has also been introduced to S Africa, NE Asia, Australia, North America, Pacific islands (New Zealand), the Russian Far East, and S South America.

62. LAUNAEA Cassini in F. Cuvier, Dict. Sci. Nat. 25: 321. 1822.

栓果菊属 shuan guo ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Ammoseris Endlicher; *Brachyramphus* Candolle; *Hexinia* H. L. Yang; *Lomatolepis* Cassini; *Microrhynchus* Lessing; *Paramicrorhynchus* Kirpicznikov; *Rhabdotheca* Cassini.

Herbs, perennial, often rosulate, sometimes acaulescent, (almost) glabrous. Stem erect, ascending-erect, procumbent, or creeping. Leaves undivided and subentire or sinuate-dentate to pinnately divided. Synflorescence corymbiform or paniculiform, with few to numerous capitula or sometimes capitulum solitary. Capitula with 5–20(–30) florets. Involucre cylindric. Phyllaries with indistinct to conspicuous white scarious margin; outer phyllaries in several series, gradually longer centripetally, ± imbricate with longest 1/2–3/4 as long as inner ones; inner phyllaries 5–8, ± equal in length, ± linear-lanceolate. Receptacle naked. Florets yellow. Achene whitish, grayish, blackish, or brownish, homomorphic and all with 5 main ribs or dimorphic and inner with 4 and outer with 5 main ribs, usually accompanied by 2 secondary ribs, smooth or transversely wrinkled, apex truncate to attenuate. Pappus white, of equal faintly scabrid bristles, caducous with pappus disk or persistent.

Fifty-four species: Africa, C, S, and SW Asia, S Europe; four species (one endemic) in China.

1a. Subshrubs; flowering stems hardened, intricately and divaricately branched, erect, with numerous capitula on subulate and after shedding of capitula subspinescent peduncles ..... 2. *L. polydichotoma*
1b. Herbs; flowering stems herbaceous, creeping, procumbent, or erect, weak, if divaricately branched then never intricate and never with subulate later subspinescent peduncles.
2a. Plants with flagelliform branching runners on nodes with small leaf rosettes and solitary pedunculate capitula ..... 4. *L. sarmentosa*
2b. Plants with procumbent to erect stems or acaulescent.
3a. Phyllaries (especially inner ones) with narrow to inconspicuous white scarious margin; achene 4–7 mm, homomorphic, with 5 main ribs; pappus persistent ..... 1. *L. acaulis*
3b. Phyllaries (especially outer ones) with broad and conspicuously white scarious margin; achene 2–4 mm, dimorphic, inner ones whitish to grayish with 4 thick main ribs, outer ones brownish to grayish, ± compressed, and with 5 main ribs; pappus caducous with pappus disk ..... 3. *L. procumbens*

1. Launaea acaulis (Roxburgh) Babcock ex Kerr in Craib, Fl. Siam. 2: 299. 1936.

光茎栓果菊 guang jing shuan guo ju

Prenanthes acaulis Roxburgh, Fl. Ind., ed. 1832, 3: 403. 1832; *Crepis acaulis* (Roxburgh) J. D. Hooker; *Lactuca glabra* Candolle; *Launaea glabra* (Candolle) Franchet; *Microrhynchus glaber* Wight; *Youngia acaulis* (Roxburgh) Candolle.

Herbs 10–35 cm tall, perennial, subacaulescent or caulescent, rosulate, glabrous. Rootstock thick, woody, with shoot-bearing roots. Stems few to some, slender, ascending-erect, sparsely branched or simple, leafless or rarely with a few leaves near base. Rosette leaves (sometimes a few extended to basal portion of flowering shoot) spatulate to lanceolate, 5–14 × 0.5–1 cm, base cuneate, margin denticulate and subentire to shallowly sinuate-dentate, apex acute, obtuse, or rounded. Synflorescence sparsely corymbiform, with 1 to a few capitula. Capitula with usually 10–14 florets. Involucre cylindric, 1.2–1.5 cm at anthesis, to 1.7 cm in fruit. Phyllaries with narrow or indistinct scarious margin; outer phyllaries triangular-ovate to lanceolate, longest ca. 1/2 as long as inner phyllaries; inner phyllaries 5–9. Achene whitish, homomorphic, columnar, cylindric, or subfusiform, 4–7 mm, with 5 main ribs, apex truncate. Pappus 6–8 mm, persistent. Fl. and fr. Apr–May. 2*n* = 18.

Roadsides on mountain slopes, wastelands, sparsely forested steppes; 300–3600 m. Guangxi, Guizhou, Hainan, Sichuan, Yunnan [Bangladesh, Bhutan, India, Kashmir, Laos, Myanmar, Nepal, N Thailand, N Vietnam].

2. Launaea polydichotoma (Ostenfeld) Amin ex N. Kilian, Englera 17: 166. 1997.

河西菊 he xi ju

Chondrilla polydichotoma Ostenfeld in Hedin, S. Tibet 6(3): 29. 1922; *Hexinia polydichotoma* (Ostenfeld) H. L. Yang; *Zollikoferia polydichotoma* (Ostenfeld) Iljin.

Herbs 15–50 cm tall, perennial, spheroid. Caudex without residue of fibrous and lacerate sheath, with many stems. Stems erect, hardened to herbaceous, intricately and divaricately branched from base. Lower stem leaves sessile, linear, 0.5–4 × 0.2–0.5 cm, base semiamplexicaul, apex obtuse; leaves higher up on stem reduced and narrowly spatulate to narrowly lan-

ceolate and finally reduced to ovate-acute bracts. Synflorescence divaricately paniculiform, with numerous capitula. Capitula with 5–11 florets; peduncle subulate and after shedding of capitulum hardened and subspinescent. Involucre cylindric, 9–12 × 2–3 mm. Phyllaries glabrous, with indistinct scarious margin; outer phyllaries triangular-ovate to lanceolate, longest ca. 3/4 as long as inner phyllaries; inner phyllaries (4 or)5. Achene pale yellow to yellowish brown, homomorphic, cylindric to obcolumnar, 3–5 mm, with 5 main ribs, transversely wrinkled, apex truncate. Pappus 7–10 mm, deciduous. Fl. and fr. May–Sep.

● Sandy soils, edges of sandy soils, between sand dunes; 400–2100 m. Gansu, Xinjiang.

Molecular phylogenetic analyses by N. Kilian (unpubl.) corroborate the classification of *Launaea polydichotoma* in *Launaea*, where it is closely related to *L. acanthodes* (Boissier) Kuntze of SW Asia.

3. Launaea procumbens (Roxburgh) Ramayya & Rajagopal, Kew Bull. 23: 465. 1969.

假小喙菊 jia xiao hui ju

Prenanthes procumbens Roxburgh, Fl. Ind., ed. 1832, 3: 404. 1832; *Launaea fallax* (Jaubert & Spach) Kuntze; *Microrhynchus fallax* Jaubert & Spach; *Paramicrorhynchus procumbens* (Roxburgh) Kirpicznikov; *Sonchus lakouensis* S. Y. Hu; *S. mairei* H. Léveillé (1915), not H. Léveillé (1913); ?*Youngia alashanica* H. C. Fu; *Zollikoferia fallax* (Jaubert & Spach) Boissier.

Herbs, perennial, rosulate, branched from base, procumbent to ascending. Taproot with shoot-bearing lateral roots. Stems 5–30 cm, divaricately branched, puberulent or glabrous, with few leaves or leafless. Rosette leaves spatulate, 5–7 × 2–3 cm, sinuate-dentate to variously pinnately lobed, tapering into a narrow base, margin white cartilaginous denticulate; lateral lobes 3 or 4 pairs, elliptic to triangular, apex rounded to obtuse; terminal lobe lanceolate to elliptic, apex obtuse. Stem leaves smaller, base often clasping, otherwise similar to rosette leaves. Synflorescence divaricately paniculiform, with capitula frequently clustered. Capitula with 15–20(–30) florets. Involucre cylindric, 10–12 × ca. 3 mm. Phyllaries glabrous, margin broadly white scarious, apex acute to obtuse; outer phyllaries triangular-ovate to linear-lanceolate, to 2/3 as long as inner phyllaries; inner phyllaries 8. Achenes dimorphic, 2–4 mm, apex pointed to subtruncate; outer achenes grayish to brown, ± fusiform, ± compressed, with 5 main ribs, transversely wrinkled; inner achenes whitish to grayish, columnar, with 4 thick, soft main ribs, smooth. Pappus 8–9 mm, caducous with pappus disk. Fl. and fr. Jun–Oct. 2*n* = 18.

Alkaline areas, steppes, meadows, irrigated land, floodplains; 1500–2000 m. Gansu, Nei Mongol (Alxa Meng), Sichuan, Xinjiang, Yunnan [Afghanistan, India, Kashmir, Kazakhstan, Myanmar, Nepal, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

Molecular phylogenetic analyses by N. Kilian (unpubl.) corroborate his previous conclusion inferred from achene morphology (N. Kilian, Englera, 17. 1997) that *Launaea procumbens* is very closely related to the following species, *L. sarmentosa*, which provides the type of the name *Launaea*, therefore refuting its generic segregation as *Paramicrorhynchus*. The species enters China both from the south (Sichuan, Yunnan) and the northwest (Gansu, W Nei Mongol, Xinjiang). Its presence in W Nei Mongol was reported by Tzvelev (Rast. Tsentral. Azii 14b: 79. 2008). The description and illustration of *Youngia alashanica* (H. C. Fu in Ma, Fl. Intramongol., ed. 2, 4: 849. 1993) from Ejin Qi, Nei Mongol, with high probability actually also refer to *L. procumbens* and would confirm its occurrence there.

4. Launaea sarmentosa (Willdenow) Kuntze, Revis. Gen. Pl. 1: 350. 1891.

匐枝栓果菊 fu zhi shuan guo ju

Prenanthes sarmentosa Willdenow, Phytographia, 10. 1794; *Launaea pinnatifida* Cassini; *Microrhynchus sarmentosus* (Willdenow) Candolle.

Herbs, perennial, rosulate, creeping, glabrous. Taproot with trailing shoot-bearing lateral roots. Stems several, flagelliform, creeping, 20–90 cm, branched; nodes 4–15 cm apart, with adventitious roots and secondary leaf rosettes. Rosette leaves spatulate, 3–8 × 0.6–1 cm, sinuate-dentate to pinnately lobed, attenuate toward base, margin weakly to distinctly denticulate, apex acute, obtuse, or rounded. Capitulum solitary, terminating secondary leaf rosettes along stems, with usually 14–18 florets; peduncle wiry, 1–3 cm. Involucre cylindric, 1.1–1.4 cm. Phyllaries with distinct white scarious margin, apex acute to obtuse; outer phyllaries triangular-ovate to linear-lanceolate, longest ca. 1/2 as long as inner phyllaries; inner phyllaries 8. Achenes weakly dimorphic, brownish to blackish, columnar to cylindric, 3–5 mm; outer achenes with 5 thick soft ribs, smooth, apex pointed to subtruncate; inner achenes with 4 ribs. Pappus 4–8 mm, caducous with pappus disk. Fl. and fr. Jun–Sep. 2*n* = 18.

Open sandy coastal areas just above high tide mark. Guangdong, ?Guangxi, Hainan [India, Indonesia (Java), Myanmar, Sri Lanka, Thailand, Vietnam; E and SE Africa, W Australia].

63. SONCHUS Linnaeus, Sp. Pl. 2: 793. 1753.

苦苣菜属 ku ju cai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, annual, biennial, or perennial. Stem erect, not or sparsely branched below synflorescence, leafy. Leaves pinnate to undivided. Synflorescence corymbiform or paniculiform, with few to numerous capitula. Capitula with usually 70–300 florets. Involucre campanulate to broadly campanulate, as peduncle often with stipitate glandular hairs and basally ± white tomentose. Phyllaries green, glabrous or glandular hairy; outer phyllaries in several series, gradually longer centripetally, ± imbricate with longest 1/2–3/4 as long as inner ones; inner phyllaries 8–15, ± equal in length, linear-lanceolate to linear. Receptacle naked. Florets yellow. Achene

brownish, ovoid to ellipsoid, compressed, narrowed toward both ends, with (4 or)5 main ribs usually accompanied by 2 secondary ribs, smooth or transversely wrinkled. Pappus white, caducous or persistent, of numerous soft fine outer bristles intermixed with some thicker often ± easily caducous inner bristles.

About 90 species in its wider circumscription: Africa, Asia, Australia, Europe, Pacific islands (New Zealand); five species (two introduced) in China.

The revised, wider circumscription of *Sonchus* is based on molecular phylogenetic analyses by S. C. Kim et al. (Molec. Phylogen. Evol. 44: 578–597. 2007) and includes several former segregates, which, however, are not present in China.

The main diversity of this genus is in E Africa, the W Mediterranean region, and the mid-Atlantic archipelagos.

1a. Achene distinctly oblanceolate in outline, strongly or distinctly compressed, space between slender ribs much wider than main ribs; annuals (or biennials).
  2a. Achene strongly compressed, ± winged, smooth when fully mature; auricles of middle stem leaves rounded and appressed ..... 4. *S. asper*
  2b. Achene distinctly compressed, not winged, distinctly wrinkled when fully mature; auricles of middle stem leaves usually acutely prostrate ..... 5. *S. oleraceus*
1b. Achene narrowly ellipsoid, moderately to weakly compressed, space between ribs usually narrower than ribs; perennials.
  3a. Outer phyllaries triangular-ovate to lanceolate, 1.5–3 mm wide; peduncles and involucres never glandular hairy; pappus persistent, 1.1–1.2 cm ..... 1. *S. brachyotus*
  3b. Outer phyllaries ± linear-lanceolate, 1–2 mm wide; peduncles and involucres mostly glandular hairy or more rarely non-glandular; pappus persistent or caducous, 6–9 mm.
    4a. Pappus persistent; peduncles and involucres glandular hairy or not; achene ± elliptic in cross section, with 1(or 2) weakly prominent main rib(s) on either face; plants with a taproot ..... 2. *S. wightianus*
    4b. Pappus caducous ± as a unit; peduncles and involucres always glandular hairy; achene ± quadrangular in cross section, with 1 very strongly prominent main rib on either face; plants with a short thick rhizome ..... 3. *S. palustris*

1. Sonchus brachyotus Candolle, Prodr. 7: 186. 1838.

长裂苦苣菜 chang lie ku ju cai

Sonchus arenicola Voroschilov; *S. arvensis* Linnaeus subsp. *arenicola* (Voroschilov) Voroschilov; *S. arvensis* f. *brachyotus* (Candolle) Kirpicznikov; *S. arvensis* subsp. *brachyotus* (Candolle) Kitamura; *S. brachyotus* var. *potaninii* Tzvelev; *S. cavaleriei* H. Léveillé; *S. chinensis* Fischer; *S. fauriei* H. Léveillé & Vaniot; *S. taquetii* H. Léveillé.

Herbs 30–100 cm tall, perennial. Taproot with shoot-bearing lateral roots. Stem usually unbranched below synflorescence, glabrous. Basal and lower stem leaves narrowly elliptic to oblanceolate, 5–20 × 1–3(–5) cm, undivided or rarely pinnatifid to pinnatipartite, glabrous, base semiamplexicaul to shortly auriculately clasping, margin denticulate and often sinuate-dentate, apex rounded, obtuse, or subacute; lateral lobes triangular to narrowly triangular if any. Middle and upper stem leaves similar to lower leaves but smaller. Synflorescence corymbiform, with few to several capitula. Capitula with very many (usually 170–300) florets; peduncle 0.5–7 cm, slender, glabrous or more rarely white tomentose apically and glabrescent. Involucre broadly campanulate, ca. 1.5 cm, glabrous or more rarely basally faintly white tomentose. Phyllaries mostly glabrous, apex acute; outer phyllaries triangular-ovate to lanceolate, 1.5–3 mm wide. Corolla 1.6–2.6 cm. Achene narrowly ellipsoid, 2–4 mm, subcompressed, with 1–3 main ribs on either face, weakly rugose. Pappus 1.1–1.2 cm, persistent. Fl. and fr. May–Sep. 2*n* = 18.

Grassy slopes in mountains, by rivers, alkaline areas; 300–4000 m. ?Fujian, Gansu, Guangdong, Guangxi, Hebei, Heilongjiang, Henan, ?Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan, ?Zhejiang [Japan, Kazakhstan, Kyrgyzstan, Mongolia, SE Russia, Thailand].

The diploids *Sonchus brachyotus* and *S. wightianus* together with the diploid Mediterranean and SW to C Asian *S. maritimus* Linnaeus and the chiefly European polyploid *S. arvensis* Linnaeus (see also note under *S. wightianus*) form a group of closely related species. Identity and delimitation of *S. brachyotus*, *S. wightianus*, and *S. arvensis* (incl. *S. uliginosus* M. Bieberstein) had long been misunderstood, before Boulos (Bot. Not. 126: 155–196. 1973) clarified their taxonomy. Due to the confusion in the past, the distribution of *S. brachyotus* in China is probably still incompletely known. Two conceptual problems surrounded this species. 1) The name *S. transcaspicus* Nevski was applied (e.g., FRPS 80(1): 66. 1997) for plants of this group with glabrous, non-glandular involucres and undivided leaves, and that species was considered as widely distributed in China, except for the southeast. *Sonchus transcaspicus*, however, is a name coined for C Asian populations of *S. maritimus* (see, e.g., Kirpicznikov, Fl. URSS 29: 244–260. 1964). The alleged minor differences in leaf shape are not consistent and do not justify the recognition of two taxonomic entities, as has been concluded already by Boulos (loc. cit.) and more recently confirmed by Sennikov (Bot. Zhurn. 85(12): 90–94. 2000). The easternmost occurrences of *S. maritimus/S. transcaspicus* are in Tajikistan and Kyrgyzstan (according to Sennikov, loc. cit.) or, more likely, even further west in E Turkmenistan (Boulos, loc. cit.; Tzvelev, Rast. Tsentral. Azii 14b: 77. 2008). The species is also not given in the treatment of *Sonchus* for the immediately adjacent Chinese province of Xinjiang (C. H. An, Fl. Xinjiang. 5: 434–438. 1999). *Sonchus transcaspicus* sensu FRPS (80(1): 66. 1997) instead refers to the frequent undivided-leafy form of *S. brachyotus*. The latter species, like *S. arvensis* and in contrast to *S. maritimus*, does not actually have a rhizome, although often stated in the literature, but has lateral roots that produce new shoots even after the root system has been fragmented. Moreover, *S. maritimus/S. transcaspicus* is a species with glaucous leaves, smaller capitula with 80–150 florets, a corolla with the tube much shorter than the ligule, achene of 2–3 mm only, and

a caducous pappus. 2) The name *S. uliginosus* has been applied (e.g., FRPS 80(1): 68. 1997) for plants of this group with glabrous, non-glandular involucres and pinnately lobed leaves with broadly triangular-obovate to semiorbicular lateral lobes. For the most part, this includes plants of *S. wightianus* (also referred to as *S. wightianus* subsp. *wallichianus*). Some records, however, from the northern provinces especially, apparently refer to the rarer pinnately leafy form of *S. brachyotus*.

2. Sonchus wightianus Candolle, Prodr. 7: 187. 1838.

苣荬菜 ju mai cai

Sonchus lingianus C. Shih; *S. picris* H. Léveillé & Vaniot; *S. wallichianus* Candolle; *S. wightianus* subsp. *wallichianus* (Candolle) Boulos.

Herbs 30–150 cm tall, perennial, with a taproot. Stem branched from base or higher, glabrous below synflorescence. Basal and lower stem leaves oblanceolate to elliptic, 6–24 × 1.5–6 cm, undivided or pinnatifid to pinnatipartite, glabrous, base narrowed (in basal leaves) to auriculately clasping (in lower stem leaves), margin denticulate to mucronulately dentate, apex obtuse to acute; lateral lobes if present 2–5 pairs, lanceolate, ovate, semiorbicular, or sometimes triangular-ovate; terminal lobe narrowly ovate to elliptic, ± large, apex obtuse to acuminate. Middle and upper stem leaves elliptic to lanceolate, smaller, otherwise similar to lower leaves. Synflorescence corymbiform, with several to many capitula. Capitula with very many (usually 180–300) florets; peduncle slender, apically white tomentose, densely glandular hairy or non-glandular. Involucre broadly campanulate, 1.2–1.5 cm, base ± white villous to tomentulose and glandular hairy or not. Phyllaries with or without glandular hairs, apex long acuminate; outer phyllaries lanceolate, 1–1.5 mm wide. Corolla 1.2–1.4 cm. Achene narrowly ellipsoid, 3.5–4.5 mm, moderately compressed, ± elliptic in cross section, weakly rugose, between lateral ribs and with 1(or 2) weakly prominent main rib(s) and several secondary ribs on either face. Pappus 6–9 mm, ± persistent. Fl. and fr. Jan–Oct. 2*n* = 18.

Grasslands on mountain slopes, grasslands in forests, forest margins, thickets, beside fields, moist places or near water, wastelands on mountain slopes, gravelly areas by rivers; 300–2300 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Ningxia, Shaanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [NE Afghanistan, Bhutan, India, Indonesia (Java), Kashmir, Laos, Malaysia (Peninsular), Myanmar, Nepal, N Pakistan, N Philippines (Luzon), Sri Lanka, N Thailand, N Vietnam].

Sonchus wightianus has frequently been misidentified with the habitually similar *S. arvensis*, which is chiefly restricted to Europe (but also introduced to North America) and a hybridogenous species, in which a tetraploid (2*n* = 36) *S. arvensis* subsp. *uliginosus* (M. Bieberstein) Nyman (with non-glandular capitula and peduncles) and a hexaploid (2*n* = 54) *S. arvensis* subsp. *arvensis* (with glandular capitula and peduncles) are distinguished. *Sonchus arvensis* is probably derived from hybridization, in which *S. brachyotus* and/or *S. wightianus* on the maternal side and *S. maritimus* and/or *S. crassifolius* Pourret ex Willdenow on the paternal side are involved (S. C. Kim et al., Molec. Phylogen. Evol. 44: 576–597. 2007). The diploid *S. wightianus* has adaxially often reddish marginal florets and does not, in contrast to *S. arvensis* and *S. brachyotus*, produce shoot-bearing roots. Also, in *S. wightianus* plants with non-glandular or glandular peduncles and capitula occur. The former have been distinguished as *S. wightianus* subsp. *wallichianus* and referred to in FRPS (80(1): 66. 1997) as *S. uliginosus* (= *S. arvensis* subsp. *uliginosus*), but they seem to be neither geographically nor ecologically separated. Absence of glandular indumentum is a variation not uncommon in *Sonchus*, as in the case of *S. wightianus*, and apparently is without systematic value. *Sonchus lingianus*, described from China, is a mere form of *S. wightianus* with spatulate to narrowly elliptic, undivided leaves.

3. Sonchus palustris Linnaeus, Sp. Pl. 2: 793. 1753.

沼生苦苣菜 zhao sheng ku ju cai

Herbs to 1.8 m tall, perennial. Rhizome short, 4–5 cm thick. Stems stout, base ca. 3 cm in diam., branched apically. Lower stem leaves sessile, oblanceolate to lanceolate, 15–35 × 5–20 cm, undivided to pinnatipartite, glabrous, base sagittately clasping, margin denticulate, apex acuminate; lateral lobes if present 1–3 pairs, lanceolate, apex acute; terminal lobe triangular to triangular-lanceolate. Middle and upper stem leaves lanceolate; uppermost stem leaves reduced, linear-lanceolate to linear. Synflorescence corymbiform to paniculately corymbiform, with many capitula. Capitula with many (usually 70–90) florets; peduncle slender, densely glandular hairy. Involucre campanulate, to 1.5 cm. Phyllaries abaxially glandular hairy, apex acute to acuminate; outer phyllaries linear-lanceolate, 1–2 mm wide; inner phyllaries linear-lanceolate. Corolla ca. 1.2 cm. Achene narrowly ellipsoid, ca. 4 mm, weakly compressed, ± quadrangular in cross section, weakly rugose, between lateral ribs usually with 1 very strongly prominent main rib and several secondary ribs on either face. Pappus 7–8 mm, caducous ± as a unit. Fl. and fr. Jun–Sep. 2*n* = 18.

By water and lakes; 400–900 m. Xinjiang [Kazakhstan, Kyrgyzstan, W Russia, Tajikistan, Turkmenistan, Uzbekistan; Europe].

4. Sonchus asper (Linnaeus) Hill, Herb. Brit. 1: 47. 1769.

花叶滇苦菜 hua ye dian ku cai

Sonchus oleraceus Linnaeus var. *asper* Linnaeus, Sp. Pl. 2: 794. 1753; *S. spinosus* Lamarck.

Herbs 20–50 cm tall, annual. Stem usually unbranched and glabrous below synflorescence. Basal and lower stem leaves extremely variable, obovate, spatulate, or elliptic, 7–13 × 2–5 cm, undivided or ± irregularly pinnatisect, glabrous, adaxially dark green and ± glossy, base attenuate and ± auriculate, margin usually densely spinulosely dentate, apex acute, acuminate, or obtuse; lateral lobes ± triangular, semiorbicular, or elliptic. Middle and upper stem leaves spatulate to lanceolate, base auriculately clasping with conspicuous rounded and appressed auricles, otherwise similar to lower leaves. Synflorescence densely corymbiform, with few to some capitula. Capitula with many florets; peduncle 0.5–5 cm, slender, glabrous or densely glandular hairy. Involucre ± campanulate, ca. 1.2 cm. Phyllaries abaxially glabrous or more rarely glandular hairy, apex acute; outer phyllaries narrowly lanceolate, 1–2 mm wide. Corolla ca. 1 cm. Achene ± broadly obcolumnar, 2–3 mm, strongly compressed, ± winged, between lateral ribs usually with 3 slender ribs on either side, space between slender ribs much wider than ribs, smooth with only lateral ribs usually antrorsely finely spinulose. Pappus ca. 7 mm, ± caducous. Fl. and fr. May–Oct. 2*n* = 18.

Mountain slopes, forest margins, by water, field margins, ruderal areas; 1500–3700 m. Naturalized in Guangxi, Hubei, Jiangsu, Shandong, Sichuan, Taiwan, Xinjiang, Xizang, and Zhejiang [presumably originating from Europe and Mediterranean region].

Sonchus asper is naturalized in areas adjacent to China including Afghanistan, Bhutan, India, Japan, Kashmir, Kazakhstan, Korea, Kyrgyzstan, Nepal, Pakistan, Russia, Tajikistan, Thailand, Turkmenistan, Uzbekistan, and Vietnam. The species is also naturalized in sub-Saharan Africa, Asia, Australia, New Guinea, North and South America, and Pacific islands (New Zealand).

5. Sonchus oleraceus Linnaeus, Sp. Pl. 2: 794. 1753.

苦苣菜 ku ju cai

Sonchus ciliatus Lamarck; *S. mairei* H. Léveillé (1913), not H. Léveillé (1915).

Herbs 40–150 cm tall, annual or sometimes biennial. Stem below synflorescence simple or branched, glabrous. Basal and lower stem leaves with basal portion petiole-like and attenuate, mostly smaller than middle stem leaves, otherwise similar. Middle and upper stem leaves extremely variable, elliptic, oblanceolate, or lanceolate, 6–20 × 2–9 cm, almost entire to ± irregularly pinnatisect, soft, glabrous, adaxially dull green, base auriculately clasping with auricles usually acutely prostrate, margin ± coarsely spinulosely dentate, apex acute; lateral lobes triangular to elliptic, usually recurved, apex acute to acuminate; terminal lobe larger than others, broadly triangular, broadly hastate, or obovate-cordate. Synflorescence shortly corymbiform or racemiform, with few to several capitula. Capitula with many florets; peduncle 0.5–3(–5) cm, slender, glabrous, glandular hairy, or apically white tomentose. Involucre ± campanulate, 1–1.2 cm. Phyllaries glabrous or with few glandular hairs, apex ± obtuse; outer phyllaries triangular to narrowly lanceolate, 1–3 mm wide. Corolla 1–2 cm. Achene obcolumnar, 2.5–4 mm, distinctly compressed, between lateral ribs with 3(–5) slender ribs on either side, space between slender ribs much wider than ribs, distinctly rugose when fully mature. Pappus 6–8 mm, ± persistent. Fl. and fr. May–Dec. 2*n* = 32.

Mountain slopes, forests, forest margins, fields, near water, open land, ruderal areas; 1700–3200 m. Naturalized in Anhui, Fujian, Gansu, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, and Zhejiang [presumably originating from Europe and Mediterranean region].

Sonchus oleraceus is naturalized in all countries neighboring China and is anthropogenically distributed almost worldwide.

The entire plants are used medicinally.

64. CHONDRILLA Linnaeus, Sp. Pl. 2: 796. 1753.

粉苞菊属 fen bao ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, perennial [or rarely annual], with or without basal leaf rosette, often broomlike, glabrous or with simple bristles, arachnoid hairy, or tomentose. Synflorescence of individual axes in broomlike plants sparsely racemiform or with a single terminal capitulum. Capitula with usually 5–12 florets. Involucre narrowly cylindric. Phyllaries glabrous, arachnoid hairy, or with simple bristles; outer phyllaries few, only slightly longer centripetally, longest ca. 1/4 as long as inner ones; inner phyllaries 5(–7) or ca. 8, ± equal in length, ± linear-lanceolate. Receptacle naked. Florets yellow. Achene body subcylindric, somewhat narrowed toward base, with 5 main ribs, each rib usually divided into 3 secondary ribs, apically or from middle with tubercles or scales, apically usually with a corona of 5 entire or 3-lobed ± membranous scales; beak usually present, short and stout to longer and filiform, when fully mature with or without fine transversal articulation preforming rupture of beak. Pappus white, simple, of scabrid bristles.

About 30 species: mostly in C and SW Asia and the Mediterranean region; ten species in China.

The noxious weed *Chondrilla juncea* Linnaeus has been introduced to Australia, North and South America, and Pacific islands (New Zealand) but has not yet been reported from China.

1a. Capitula with 5 or 6 florets; inner phyllaries 5(–7).
  2a. Achene with a conspicuous 0.5–1.5 mm beak, body with well-developed apical corona of scales ..... 9. *C. pauciflora*
  2b. Achene shortly attenuate into a rudimentary stout beak of 0.1–0.3 mm, body without apical corona of scales or corona at most very indistinct ..... 10. *C. ambigua*
1b. Capitula with 9–12 florets; inner phyllaries ca. 8.
  3a. Beak of mature achene without fine transversal articulation preforming rupture of beak; plants rosulate but rosette leaves withered at anthesis.
    4a. Stem leaves linear-lanceolate to linear, to 0.6 cm wide, subglabrous; stem and branches glabrous; achene body with corona of 5 variably shaped entire to weakly 3-lobed scales to 0.5 mm ..... 1. *C. brevirostris*
    4b. Stem leaves lanceolate to broadly ovate, 1–3 cm wide, pubescent; stem and branches arachnoid pubescent to tomentose; achene body with corona of 5 linear-lanceolate, entire to sometimes 3-lobed, and acute scales to 1 mm ..... 2. *C. aspera*
  3b. Beak of mature achene with fine transversal articulation preforming rupture of beak; plants never rosulate.
    5a. Achene beak articulation approximately in its middle; inner phyllaries dark green or blackish, bristles blackish if present.
      6a. Achene body below corona smooth or with isolated tubercles, beak constricted at articulation .... 3. *C. phaeocephala*
      6b. Achene body below corona with few scales, beak not constricted at articulation ..... 4. *C. ornata*

5b. Achene beak articulation distinctly below its middle, near its base, or below or slightly above upper edge of corona; inner phyllaries green, light green, or grayish green, bristles pale if present.
7a. Corona scales of achene of approximately quadrangular shape, upper margin weakly 3-lobed or entire.
8a. Achene body below corona usually without scales or more rarely with few very small toothlike scales, beak 0.8–1.5 mm ..... 5. *C. piptocoma*
8b. Achene body below corona with few rows of conspicuous quadrangular scales similar to corona scales, beak 1–2.5 mm ..... 6. *C. laticoronata*
7b. Corona scales of achene distinctly triangular and undivided or deeply divided with distinctly triangular lobes.
9a. Corona scales of achene deeply and ± equally to very unequally (with dominating middle lobe) 3-lobed; achene body below corona with few rows of tubercles and narrow scales; beak 1.3–3(–4) mm, articulation below its middle and above upper edge of corona terminating basal conical portion ..... 7. *C. leiosperma*
9b. Corona scales of achene undivided and narrowly triangular; achene body below corona with few rows of short and wide scales; beak 1.2–2.3 mm, articulation at its base near upper edge of corona ..... 8. *C. rouillieri*

1. Chondrilla brevirostris Fischer & C. A. Meyer, Index Sem. Hort. Petrop. 3: 32. 1837.

短喙粉苞菊 duan hui fen bao ju

Chondrilla filifolia Iljin.

Herbs 30–60 cm tall, perennial, rosulate, becoming broomlike. Stem strongly erect-spreadingly branched from base, basally somewhat setaceous otherwise glabrous; branches slender, virgate. Rosette leaves spatulate to elliptic, 7–11 × 0.5–1.5 cm, withered at anthesis, runcinately pinnate, glabrous or abaxially with sparse rigid hairs. Lower and middle stem leaves lanceolate to linear, 2–11 cm × 1–5 mm, weakly but ± sharply incised or entire, glabrous or abaxially with sparse rigid hairs. Capitula with usually 9–12 florets. Involucre 1–1.2 cm, arachnoid hairy, occasionally with very few bristles. Phyllaries grayish green; outer phyllaries broadly triangular-ovate, longest ca. 2 mm; inner phyllaries 8. Achene body 4–5 mm, with a corona of 5 variably shaped entire to weakly 3-lobed erect scales of 0.2–0.5 mm, below corona with 1 to few rows of short rounded scales; beak 0.5–2.5 mm, without articulation. Pappus 6–9 mm. Fl. and fr. Jun–Sep. 2*n* = 15.

Desert steppes, grasslands in forests; ca. 1300 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia (W Asian and E and S European parts)].

2. Chondrilla aspera Poiret, Encycl. Suppl. 2: 329. 1811.

硬叶粉苞菊 ying ye fen bao ju

Prenanthes aspera Schrader ex Willdenow, Sp. Pl. 3: 1539. Dec 1803, not Michaux (Mar 1803); *Chondrilla stricta* Ledebour; *Youngia aspera* (Poiret) Steudel.

Herbs 60–110 cm tall, perennial, rosulate. Stem erect, branched particularly higher up, basally densely hirsute otherwise grayish white tomentose. Rosette leaves and lower stem leaves narrowly obovate to oblanceolate, 6–18 × to 5 cm, withered at anthesis, runcinately pinnate, leathery, abaxially with arachnoid hairs and with long bristles on veins. Middle and upper stem leaves broadly ovate to lanceolate, base subamplexicaul, margin dentate, smaller than lower stem leaves but otherwise similar. Synflorescence paniculiform. Capitula with usually 9–12 florets. Involucre 1.2–1.4 cm, arachnoid hairy. Phyllaries grayish green; outer phyllaries triangular-ovate, longest ca. 2 mm; inner phyllaries 8, usually ± with bristles on midvein. Achene body 3–4 mm, apically with a corona of 5 unlobed or sometimes to ± 3-lobed erect linear-lanceolate scales to 1 mm, below corona with tubercles and short scales in several rows; beak (1–)3–4(–5) mm, without articulation. Pappus 6–8 mm. Fl. and fr. Jul–Sep.

Mountain slopes; 1100–1400 m. Xinjiang [Kazakhstan, Kyrgyzstan, SC Russia, Tajikistan].

Chondrilla canescens Karelin & Kirilov, which is distinguished from *C. aspera* chiefly by 3-lobed corona scales of the achene body (Leonova, Fl. URSS 29: 562–563. 1964), was also treated in FRPS (80(1): 296. 1997) as a species from Xinjiang but was not included by C. H. An (Fl. Xinjiang. 5: 430. 1999). According to Tzvelev (Rast. Tsentral. Azii 14b: 84. 2008) the two are probably conspecific. We follow C. H. An, treating the Chinese plants all as *C. aspera*.

3. Chondrilla phaeocephala Ruprecht, Zap. Imp. Akad. Nauk 14: 59. 1869.

暗粉苞菊 an fen bao ju

Chondrilla maracandica Bunge.

Herbs 30–70 cm tall, perennial, broomlike. Stem basally erect-spreadingly and higher up divaricately branched; branches slender, glabrous or arachnoid hairy, ± leafy. Lower stem leaves narrowly elliptic, 4–4.5 × 0.2–1 cm, early deciduous, margin subentire to weakly runcinately dentate. Middle and upper stem leaves linear-elliptic, linear, or subfiliform, 2–4 cm × 0.5–1.5 mm, margin entire. Capitula with usually 10–12 florets. Involucre 1.1–1.2 cm, arachnoid hairy and with or without blackish bristles. Phyllaries dark green to blackish; outer phyllaries triangular-ovate to lanceolate, longest ca. 2.5 mm; inner phyllaries 8, abaxially with or without long bristles along midvein. Achene body 3–5 mm, with a corona of 5 short unlobed to ± unequally 3-lobed (middle lobe longest) erect scales of ca. 0.2 mm, below corona smooth or with isolated tubercles, sometimes corona inconspicuous or absent; beak stout, 0.8–2.3 mm, constricted and with distinct fine articulation approximately in its middle. Pappus 6–7 mm. Fl. and fr. Jun–Sep.

Gravelly areas in deserts; 900–4000 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan].

Chondrilla maracandica, treated as a species of the flora of Xinjiang by C. H. An (Fl. Xinjiang. 5: 430. 1999; see also Leonova, Fl. URSS 29: 578. 1964; Tzvelev, Rast. Tsentral. Azii 14b: 84. 2008), appears not convincingly distinct from *C. phaeocephala* and is here tentatively considered as conspecific.

4. Chondrilla ornata Iljin, Bjull. Otdel. Kaučuk. 3: 43. 1930.

中亚粉苞菊 zhong ya fen bao ju

Herbs 40–70 cm, perennial, broomlike. Stem strongly branched from base, basally arachnoid hairy; branches yellowish green, slender, virgate, glabrous, ± leafy. Lower stem leaves narrowly elliptic to linear, early deciduous, abaxially with bristles on midrib and at margin, margin denticulate. Middle and upper stem leaves filiform, 1–3 cm × ca. 1 mm, glabrous, margin entire. Capitula with ca. 11 florets. Involucre ca. 1.1 cm, scattered arachnoid hairy. Phyllaries dark green; outer phyllaries triangular-ovate, longest ca. 1.5 mm; inner phyllaries 8. Achene body 3–5 mm, apically with a corona of 5 wide entire to weakly and obtusely 3-lobed scales of 0.1–0.2 mm, below corona with few further scales; beak stout, 0.5–1 mm, with fine articulation approximately in its middle. Pappus 5–7 mm. Fl. and fr. Jul–Sep. 2*n* = 20.

Rocky gravelly slopes; 400–1000 m. Xinjiang [Kyrgyzstan].

No material of *Chondrilla ornata* has been seen by the present authors. The description is based on Iljin (loc. cit.), Leonova (Fl. URSS 29: 579. 1964), and C. H. An (Fl. Xinjiang. 5: 429. 1999).

5. Chondrilla piptocoma Fischer, C. A. Meyer & Avé-Lallemant, Index Sem. Hort. Petrop. 8: 54. 1842.

粉苞菊 fen bao ju

Chondrilla piptocoma subsp. *soongarica* (Stscheglejew) Iljin; *C. soongarica* Stscheglejew.

Herbs 35–120 cm tall, perennial, ± broomlike. Stem basally erect-spreadingly and higher up divaricately branched; branches slender, densely arachnoid hairy to more rarely ± glabrous, ± leafy. Lower stem leaves narrowly oblanceolate, 3.5–7 cm × ca. 4 mm, early deciduous, margin runcinately pinnate or sparsely dentate. Middle and upper stem leaves linear to filiform, 4–6 cm × 0.5–1 mm, glabrous or arachnoid hairy, margin entire. Capitulum with 9–12 florets. Involucre 1–1.3 cm, ± densely arachnoid hairy. Phyllaries grayish to light green; outer phyllaries narrowly triangular-ovate, longest ca. 2 mm; inner phyllaries 8. Achene body 3–5 mm, with ± quadrangular corona scales with margin weakly 3-lobed or entire, below corona without scales or with few very small toothlike scales; beak 0.8–1.5 mm, with fine articulation near its base below or slightly above upper edge of corona. Pappus 6–8 cm. Fl. and fr. Jun–Sep. 2*n* = 10.

Gravelly areas on floodplains; 600–3300 m. Xinjiang [Kazakhstan, SC Russia].

According to Iljin (Bjull. Otdel. Kaučuk. 3: 36. 1930) and Leonova (Fl. URSS 29: 574. 1964) the achene body below the corona in *Chondrilla piptocoma* is without or with few scales only. Chinese material with rather well-developed scales below the corona but with a short, stout beak approaches and has been treated as *C. laticoronata* (see also FRPS 80(1): 296. 1997), necessitating a reassessment of the delimitation between both species.

6. Chondrilla laticoronata Leonova, Fl. URSS 29: 754. 1964.

宽冠粉苞菊 kuan guan fen bao ju

Herbs 20–60 cm tall, perennial, ± broomlike. Stem erect-spreadingly branched from base, basally usually densely arachnoid hairy and sometimes with sparse rigid hairs; branches light green, slender, ± leafy. Leaves glabrous or with arachnoid hairs. Lower stem leaves narrowly lanceolate, ca. 3 cm × 3–7 mm, early deciduous, margin entire or weakly dentate. Middle and upper stem leaves linear, narrowly linear, or almost filiform, 1.5–2.5(–5) cm × 0.5–2 mm, margin entire. Capitula with 9–11 florets. Involucre 1–1.3 cm, ± white tomentose. Phyllaries whitish grayish green; outer phyllaries narrowly triangular-ovate, longest ca. 2 mm; inner phyllaries 8, sometimes with a few pale bristles on midvein. Achene body 3.5–4.5 mm, with approximately quadrangular corona scales with truncate and entire to somewhat erose margin, below corona with few rows of conspicuous quadrangular scales similar to corona scales; beak 1–2.5 mm, with fine articulation near its base below or slightly above upper edge of corona. Pappus white, 6–7 mm. Fl. and fr. Jul–Sep.

Gravelly areas; 1000–2200 m. Xinjiang [Kazakhstan, SC Russia].

The delimitation between *Chondrilla laticoronata* and *C. piptocoma* should be reassessed. See note under the latter species, above.

7. Chondrilla leiosperma Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 14: 456. 1841.

北疆粉苞菊 bei jiang fen bao ju

Chondrilla articulata L. E. Rodin; *C. brevicollis* Iljin; *C. coronifera* Iljin.

Herbs 30–120 cm tall, perennial, ± broomlike. Stem erect-spreadingly branched at base, basally ± densely arachnoid hairy, sometimes with few rigid hairs; branches slender, rather sparsely branched, glabrous or pubescent, ± leafy. Lower stem leaves narrowly elliptic to lanceolate, 3–10 × 0.4–1.2 cm, early deciduous, glabrous or arachnoid hairy, margin dentate to weakly ± runcinately pinnate to more rarely almost entire. Middle and upper stem leaves narrowly elliptic, narrowly lanceolate, or linear, 1–5(–7) cm × 1–2 mm, glabrous or with arachnoid hairs, margin entire. Capitula with 9–11 florets. Involucre 1–1.3 cm, arachnoid hairy. Phyllaries grayish green; outer phyllaries triangular-ovate, longest ca. 3 mm; inner phyllaries 8, abaxially sometimes with pale bristles on midvein. Achene body 3–5 mm, with corona scales deeply and ± equally to very unequally 3-lobed with middle lobe then dominating, below corona with few rows of tubercles and narrow scales; beak 1.3–3(–4) mm, with fine articulation below its middle and above upper edge of corona terminating basal conical portion. Pappus 5–8 mm. Fl. and fr. May–Sep. 2*n* = 15.

Mountain slopes; 200–1500 m. Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Uzbekistan].

8. Chondrilla rouillieri Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 14: 456. 1841.

基叶粉苞菊 ji ye fen bao ju

Herbs 40–90 cm tall, perennial. Stem erect, branched particularly higher up or more rarely from base, basally usually arachnoid hairy and with sparse rigid hairs or more rarely glabrous; branches slender, virgate, glabrous or sometimes apically sparsely arachnoid hairy. Lower stem leaves narrowly elliptic to narrowly lanceolate, 4–6 × 0.3–0.6 cm, early deciduous, with bristles on margin and abaxially on midvein, margin remotely dentate. Middle and upper stem leaves linear to almost filiform, 0.5–5 × 0.1–0.4(–0.6) cm, glabrous, margin entire. Capitula with 9–11 florets. Involucre 1–1.3 cm, densely arachnoid hairy. Phyllaries grayish green to light green; outer phyllaries triangular-ovate, longest ca. 2 mm; inner phyllaries 8, sometimes with a few bristles on midvein. Achene body 3.5–4(–5) mm, with corona scales narrowly triangular and undivided, below corona with few rows of short and wide scales; beak 1.2–2.3 mm, with fine articulation at its base near upper edge of corona. Pappus 6–7 mm. Fl. and fr. Jun–Sep. 2*n* = 15.

Gravelly areas in river valleys, sandy soil, forests; 700–900 m. Xinjiang [Kazakhstan, SC Russia].

9. Chondrilla pauciflora Ledebour, Fl. Altaic. 4: 148. 1833.

少花粉苞菊 shao hua fen bao ju

Chondrilla kossinskyi Iljin; *C. saisanensis* Iljin; *C. squamata* Iljin; *C. thoracifera* Iljin.

Herbs 40–110 cm tall, perennial, broomlike, basally sometimes woody. Stem ± intricately basally erect-spreadingly and higher up divaricately branched; branches slender, glabrous or sometimes apically indistinctly arachnoid hairy, ± leafy. Lower stem leaves lanceolate, 2.5–3.5 × 0.2–0.6 cm, early deciduous, glabrous, margin entire. Middle and upper stem leaves narrowly lanceolate to linear, 1–3 cm × 0.3–1.5 mm, early deciduous, glabrous, margin entire. Capitula with 5(–7) florets. Involucre 1.1–1.5 cm, sparsely arachnoid hairy especially basally. Phyllaries green to dark green; outer phyllaries broadly triangular-ovate, 1–2 mm; inner phyllaries 5(–7). Achene 5–7.5 mm; body apically with a corona of 5 erect 3-lobed to irregularly lobed scales of (0.1–)0.2–0.3 mm with lobes of ± equal length, below with 1 or 2 series of tubercles and/or scales; beak stout, 0.5–1.5(–2) mm, without articulation. Pappus 7–9 mm. Fl. and fr. May–Sep. 2*n* = 15.

Gravel steppes; 500–1500 m. Xinjiang [Kazakhstan, Russia (E European part), Uzbekistan].

C. H. An (Fl. Xinjiang. 5: 433. 1999) also includes for Xinjiang *Chondrilla macrocarpa* Leonova, a species otherwise only known from Kyzyl Kum and distinguished from *C. ambigua* by its achene with a body of up to 1.1 cm. The corresponding material has not been seen by the authors, but from the distribution this report appears very questionable (see also Tzvelev, Rast. Tsentral. Azii 14b: 86. 2008); also, from the description given by C. H. An it seems that a confusion probably exists with material of *C. pauciflora*, perhaps with rather indistinctly developed corona.

10. Chondrilla ambigua Fischer ex Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 15: 398. 1842.

沙地粉苞菊 sha di fen bao ju

Herbs 40–100 cm tall, perennial, broomlike, basally sometimes woody. Stem basally erect-spreadingly and higher up densely and intricately divaricately branched; branches slender, glabrous, ± leafy. Lower stem leaves linear-lanceolate to lanceolate, 3–7 × 0.2–0.5 cm, early deciduous, glabrous, margin entire or sometimes very scarcely dentate, apex acute. Middle and upper stem leaves linear-lanceolate to filiform, usually shorter and only 1–1.5 mm wide, otherwise like lower stem leaves. Capitula with ca. 5 florets. Involucre 1.2–1.4 cm, glabrous or sparsely arachnoid hairy especially basally. Phyllaries green to yellowish green; outer phyllaries broadly triangular-ovate, 1–2 mm; inner phyllaries 5. Achene cylindric, 5–7 mm, without or very faintly with scales or tubercles, without apical corona of scales, apically shortly attenuate into a rudimentary stout beak of 0.1–0.3 mm without articulation. Pappus 6–8 mm. Fl. and fr. May–Sep. 2*n* = 10.

Sand dunes, gravel and loess areas; 300–800 m. Xinjiang [Kazakhstan, Russia (S European part), Turkmenistan, Uzbekistan].

65. CREPIS Linnaeus, Sp. Pl. 2: 805. 1753.

还阳参属 huan yang shen shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Barkhausia Moench; *Berinia* Brignoli; *Hieracioides* Vaillant; *Lepicaune* Lapeyrouse; *Soyeria* Monnier.

Herbs, perennial, biennial, or annual, rhizomatous or with a taproot. Stems leafy or leafless. Leaves pinnate or not divided, margin entire or toothed. Synflorescence corymbiform, paniculiform, or racemiform, rarely a solitary capitulum. Capitula erect, medium to large in size. Involucre cylindric to campanulate. Phyllaries in several series; outer phyllaries ± imbricate, centripetally gradually longer, longest 1/4–2/3 or more as long as inner ones; inner phyllaries usually equal in length, linear-lanceolate, abaxially usually with simple and/or glandular hairs, rarely glabrous, adaxially glabrous or with appressed silky hairs. Receptacle naked [or more rarely paleate or with bristles]. Florets yellow [or more rarely reddish purple]. Achene cylindric to fusiform, with 10–20 equal finely spinulescent or smooth and glabrous ribs, apex distinctly attenuate, constricted, or beaked. Pappus white to pale yellowish, soft to rigidulous, scabrid, persistent or caducous.

About 200 species: Africa, Asia, Europe, North America; 18 species (five endemic) in China.

1a. Plants with a horizontal, vertical, or oblique rhizome.
2a. Leaf blade of at least some leaves pinnately lobed, otherwise stem leafless; stem leafless or leafy.

3a. Stem leafless or almost so.
4a. Phyllaries abaxially densely with white arachnoid hairs, and stiff, greenish, glandular hairs along midvein; anther tube 1–2 mm ..... 1. *C. multicaulis*
4b. Phyllaries abaxially sparsely with white arachnoid hairs, and with blackish glandular hairs along midvein; anther tube 2–3 mm ..... 2. *C. elongata*
3b. Stem leafy with leaves ± clasping stem.
5a. Involucre 7–9 mm, abaxially with short blackish glandular hairs and often with setaceous simple hairs; achene 3.5–4 mm ..... 3. *C. lyrata*
5b. Involucre 10–13 mm, abaxially glabrous or sparsely white hairy (especially at apex) or with black long simple hairs on midvein; achene 4–6 mm ..... 6. *C. coreana*
2b. Leaf blade not divided and stem always leafy.
6a. Involucre 1.4–1.6 cm or longer.
7a. Stem especially apically with white arachnoid and with stiff subulate greenish hairs; leaf blade margin irregularly and coarsely toothed; involucre abaxially densely with pale stiff subulate hairs especially on midvein ..... 5. *C. sibirica*
7b. Stem sparsely apically arachnoid hairy and densely so under capitula, also with long dark green to blackish hairs; leaf blade margin subentire; involucre abaxially white arachnoid hairy and with dark green to blackish long hairs ..... 9. *C. chrysantha*
6b. Involucre 0.8–1.3 cm.
8a. Involucre 1–1.3 cm, abaxially glabrous to sparsely white hairy (especially at apex) or with black long simple hairs on midvein ..... 6. *C. coreana*
8b. Involucre 0.8–1 cm, abaxially with stipitate blackish glandular hairs on midvein ..... 17. *C. shihii*
1b. Plants without rhizomes but with a taproot.
9a. Synflorescence racemiform to very narrowly paniculiform with some to numerous capitula ..... 14. *C. napifera*
9b. Synflorescence of a solitary capitulum or corymbiform and of 2 to numerous capitula.
10a. Inner phyllaries adaxially appressed hairy (as seen with a lens).
11a. Stem leafy; leaves sagittately clasping stem, margin of upper stem leaves revolute; synflorescence of some to many capitula; involucre 0.7–0.9 cm ..... 4. *C. tectorum*
11b. Stem leafless or sparsely leafy; leaves not clasping stem, margin not revolute; synflorescence of a solitary capitulum or of few capitula; involucre 0.9–1.5 cm.
12a. Involucre 0.9–1.1 cm; phyllaries abaxially with white arachnoid hairs along midvein but without thicker yellow hairs ..... 7. *C. oreades*
12b. Involucre 1–1.5 cm; phyllaries abaxially with ± white arachnoid hairs and especially along midvein with thicker yellowish glandular or partly non-glandular hairs ..... 8. *C. crocea*
10b. Inner phyllaries adaxially glabrous (as seen with a lens).
13a. Plants only with well-developed basal leaves or with basal leaves and lower stem leaves well developed and these larger than upper stem leaves, largest leaves oblanceolate to elliptic and 2–5 cm wide.
14a. Plants subacaulescent, 3–5 cm tall ..... 18. *C. tianshanica*
14b. Plants with well-developed stems, 20–60 cm tall.
15a. Stems leafless or almost so with stem leaves (if present) much reduced and not clasping stem ..... 15. *C. subscaposa*
15b. Stems with well-developed leaves clasping stem ..... 16. *C. darvazica*
13b. Basal leaves or lower stem leaves reduced, linear-subulate, triangular, or bractlike, middle and upper stem leaves well developed, largest stem leaves lanceolate to linear and 1–25 mm wide.
16a. Middle and upper stem leaves lanceolate, elliptic, or narrowly elliptic-lanceolate, 0.3–2.5 cm wide ..... 10. *C. phoenix*
16b. Middle and upper stem leaves linear, 1–10 mm wide.
17a. Leaf blade soft in texture, dark green; stems smooth and dark green; capitula with 18–30 florets ..... 11. *C. bodinieri*
17b. Leaf blade rigid in texture, usually pale yellowish green; stems angular and pale green; capitula with 7–12 florets (only exceptionally more).
18a. Plants sparsely to moderately and divaricately branched from base, above middle, or at apex; stem leaves to 8 cm ..... 12. *C. rigescens*
18b. Plants strongly and fastigiately branched from base or below middle; stem leaves to 3 cm ..... 13. *C. lignea*

1. Crepis multicaulis Ledebour, Icon. Pl. 1: 9. 1829.

多茎还阳参 duo jing huan yang shen

Aracium multicaule (Ledebour) D. Dietrich; *Crepis multicaulis* subsp. *congesta* (Regel & Herder) Babcock; *C. multicaulis* var. *congesta* Regel & Herder; *C. multicaulis* var. *laxa*

Regel & Herder; *C. multicaulis* subsp. *subintegrifolia* Tolmatchew & Rebrikova; *C. stoliczkae* C. B. Clarke.

Herbs 8–60 cm tall, perennial, with a short ± oblique rhizome, rosulate. Stems few to numerous, rarely solitary, rather slender, erect or curved-ascending, branched apically, glabrous or basally with sparse arachnoid hairs, usually ± leafless. Rosette leaves narrowly elliptic-lanceolate, ovate-oblanceolate, elliptic, or spatulate, 3.5–11 × 0.7–2 cm, undivided or pinnatifid to pinnatipartite, both surfaces short white pubescent, base attenuate into a petiole-like portion, margin entire or sinuate-dentate, apex acute, obtuse, or rounded; lateral lobes (if present) triangular, narrowly triangular, or elliptic, gradually smaller toward leaf base, apex obtuse to acute. Stem leaves 0–2, much reduced in size, linear, margin entire. Synflorescence paniculiform or corymbosely so, with few to several capitula. Capitula with 30–40 florets; peduncle slender, often curved-erect, with dense white arachnoid hairs and stiff greenish glandular hairs. Involucre cylindric, 7–9 × 3–5 mm. Outer phyllaries triangular-ovate to lanceolate, longest to 3 mm, apex acute to obtuse; inner phyllaries 8–10, abaxially with white arachnoid hairs and stiff greenish glandular hairs along midvein, adaxially glabrous, margin scarious, apex acute to obtuse. Anther tube 1–2 mm. Achene reddish brown, fusiform, straight or subcurved, ca. 4 mm, with 10–12 ribs. Pappus white, ca. 4 mm. Fl. and fr. May–Aug. $2n = 10$.

Forests, forest margins, open places in forests, grasslands, gravelly areas by streams and water, floodplains; 1600–3600 m. Xinjiang [Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, C and SW Russia, Tajikistan; SW Asia, N Europe].

Crepis multicaulis and *C. elongata* are closely related, and their delimitation needs reassessment.

2. Crepis elongata Babcock, Univ. Calif. Publ. Bot. 14: 326. 1928.

藏滇还阳参 zang dian huan yang shen

Crepis tibetica Babcock.

Herbs, perennial, with a horizontal or oblique rhizome. Stem solitary to few, 25–65 cm tall, erect, unbranched or moderately branched from basal third or higher up, with conspicuously erect and usually rather long branches, apically ± densely with blackish long glandular hairs. Leaves mostly basal, rosulate to crowded, oblanceolate to elliptic, (3–)5–16(–22) × 0.8–2.2 cm including a winged petiole 1/3–1/2 rest of leaf, both faces with long yellowish hairs, base cuneate-attenuate to abruptly narrowed, margin sinuate-dentate to pinnatifid with triangular segments, apex obtuse to rounded. Stem leaves 0–2, similar to basal leaves or bractlike and reduced, ± linear, margin entire. Synflorescence corymbiform to paniculately corymbiform, with (1–)3–12 capitula. Capitula with 30–40 florets; peduncle slender, 0.5–5 cm, sparsely to more densely white tomentose and with ± dense blackish glandular hairs. Involucre green to dark green, cylindric to campanulate, 7–11 × 3–5 mm. Phyllaries abaxially sparsely arachnoid hairy and with blackish glandular hairs along midvein; outer phyllaries triangular-ovate to lanceolate, longest to 1/2 (sometimes even more) as long as inner ones, apex acuminate to acute; inner phyllaries 12–14, apex acuminate. Anther tube 2–2.5 mm. Style branches dark (± blackish when dry). Achene ± dark brown, fusiform, 4–5 mm, with 10 ribs, distinctly attenuate toward apex. Pappus white, ca. 4 mm. Fl. and fr. Jun–Aug.

Mountain slopes, thickets, forests, forest margins, meadows; 2600–4200 m. W Sichuan (Kangding), Xizang, Yunnan [Bhutan, NE India, Nepal].

Babcock's names *Crepis elongata* and *C. tibetica* are of equal priority. The first synonymization of the latter with the former name in FRPS (80(1): 114. 1997) has therefore established the priority of *C. elongata* over *C. tibetica*.

3. Crepis lyrata (Linnaeus) Froelich in Candolle, Prodr. 7: 170. 1838.

琴叶还阳参 qin ye huan yang shen

Hieracium lyratum Linnaeus, Sp. Pl. 2: 803. 1753.

Herbs 20–80[–110] cm tall, perennial, with a short slender ± oblique rhizome and short caudex. Stem solitary, erect, sparsely and shortly branched apically, sparsely pubescent with yellow glandless hairs, sparsely leafy. Basal and lower stem leaves narrowly obovate to spatulate and gradually attenuate into a winged petiole-like basal portion, 10–22[–30] × 3–6 cm, almost undivided to lyrately pinnatisect, sparsely pubescent with short yellow hairs, base narrow to narrowly auriculate-amplexicaul, margin sinuate-dentate and denticulate; lateral lobes ovate, triangular-ovate, or elliptic, apex rounded to more rarely acute; terminal lobe ovate to lanceolate, much larger than lateral lobes, apex acute to rounded. Middle stem leaves spatulate to lanceolate, similar to lower stem leaves but smaller, base broader and more clasping; uppermost stem leaves bractlike. Synflorescence small, corymbiform, with few capitula. Capitula with 35–45 florets; peduncle slender, with dense short blackish glandular hairs. Involucre dark green, campanulate, 7–9 × 4–8 mm. Phyllaries abaxially with short blackish glandular and often with setaceous simple hairs; outer phyllaries linear, longest 1/4–1/2 as long as inner ones, apex acute; inner phyllaries adaxially glabrous, apex acute. Anther tube ca. 3.5 mm. Achene brown, fusiform, 3.5–4 mm, with 20 slender ribs, apex slightly constricted. Pappus white, 4–5 mm, persistent. Fl. Jun–Jul. $2n = 12$.

Moist meadows, stream banks; 1200–2400 m. Xinjiang [Kazakhstan, C Russia].

4. Crepis tectorum Linnaeus, Sp. Pl. 2: 807. 1753.

屋根草 wu gen cao

Hieracioides tectorum (Linnaeus) Kuntze.

Herbs 30–90 cm tall, annual or biennial, ± rosulate, with taproot. Stem usually solitary, erect, branched from base or middle, subglabrous to arachnoid pubescent, sparsely glandular and with white bristles, leafy. Basal and lower stem leaves linear-lanceolate, lanceolate, or oblanceolate and attenuate into a winged petiole-like basal portion, 5–15 × 0.5–1 cm, undivided or more rarely sinuate to pinnatisect, subglabrous to pubescent with glandular and simple hairs, base cuneate-attenuate, margin sparsely dentate, apex acute; lobes (if present) lanceolate to linear. Middle stem leaves similar to lower stem leaves but usu-

ally undivided and rather without a petiole-like basal portion, base ± sagittately clasping. Upper stem leaves linear-lanceolate to linear, margin entire and revolute; uppermost stem leaves bractlike. Synflorescence corymbiform to corymbosely paniculiform, with some to many capitula. Capitula with 30–70 florets. Involucre narrowly cylindric to narrowly campanulate, 7.5–8.5 × 5–7 mm in fruit. Phyllaries abaxially with sparse arachnoid and stipitate glandular hairs; outer phyllaries linear, longest 1/3–1/2 as long as inner ones, apex acute; inner phyllaries adaxially appressed hairy, margin white scarious, apex acute. Anther tube 2.5–3 mm. Achene dark or purplish brown, fusiform, 3–4 mm, with 10 ribs, apically contracted. Pappus white, ca. 4 mm. Fl. and fr. Jul–Oct. $2n = 8$.

Forest margins, grasslands in valleys, fields, wastelands; 900–1800 m. Heilongjiang, Nei Mongol, Xinjiang [Kazakhstan, Mongolia, Russia; Europe].

5. Crepis sibirica Linnaeus, Sp. Pl. 2: 807. 1753.

西伯利亚还阳参 xi bo li ya huan yang shen

Aracium sibiricum (Linnaeus) Schultz Bipontinus; *Crepis ruprechtii* Boissier; *Hapalostephium sibiricum* (Linnaeus) D. Don; *Hieracioides ruprechtii* (Boissier) Kuntze; *Hieracium sibiricum* (Linnaeus) Lamarck; *Lepicaune sibirica* (Linnaeus) K. Koch; *Sonchus caucasicus* Biehler; *S. flexuosus* Ledebour; *Soyeria sibirica* (Linnaeus) Monnier.

Herbs 0.5–1.5 m tall, perennial, with stout horizontal to oblique rhizomes. Stem solitary, stout, apically rather sparsely branched, especially apically with white arachnoid hairs and stiff subulate greenish hairs, leafy. Basal leaves and lower stem leaves with a winged petiole 6–15 cm or more; leaf blade narrowly oblong-elliptic, oblong-ovate, ovate, or elliptic, 16–20 × 5.5–10 cm, abaxially scabrid and white hispid and hirsute on veins, adaxially glabrous, margin hispid, base abruptly narrowed to rarely attenuate, margin ± coarsely dentate, apex acute to acuminate. Middle stem leaves similar to lower stem leaves but petiole shorter, more broadly winged, dentate, and basally clasping; leaf blade ovate to lanceolate, basally attenuate. Upper stem leaves sessile and smaller, otherwise similar to middle stem leaves; uppermost stem leaves elliptic to linear-lanceolate, reduced in size, margin entire. Synflorescence laxly corymbiform, with few to several capitula. Capitula many flowered; peduncle (1–)2–15 cm, stout. Involucre campanulate, ca. 1.5[–2] × 1–1.5 cm, dark green in fruit. Phyllaries abaxially with dense stiff subulate hairs especially on midvein; outer phyllaries ovate-lanceolate to narrowly elliptic-lanceolate, longest more than 1/2 as long as inner ones, apex acute to obtuse; inner phyllaries adaxially glabrous, apically subacute. Achene dark brown to reddish brown, fusiform, 9–10 mm, subcurved, with 20 ribs, apically attenuate. Pappus white or pale yellowish white, 8–9 mm. Fl. and fr. May–Sep.

Mountain slopes, forest margins, forests, thickets, grasslands in forests; 1000–2700 m. Heilongjiang, Liaoning, Nei Mongol, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan; E Europe].

6. Crepis coreana (Nakai) H. S. Pak, Fl. Coreana 7: 378. 1999.

宽叶还阳参 kuan ye huan yang shen

Hieracium coreanum Nakai, Bot. Mag. (Tokyo) 29: 9. 1915.

Herbs 25–55 cm tall, perennial, with a short ± oblique rhizome. Stem solitary, erect, branched from middle or in apical portion, rarely unbranched, sparsely arachnoid hairy sometimes mixed with black rigid hairs especially in synflorescence. Basal leaves present at anthesis; petiole 1.5–11.5 cm, winged; leaf blade spatulate to elliptic, 4–8 × 2–3.5 cm, glabrous or sparsely arachnoid hairy, margin sharply and pectinately dentate to rarely lyrately pinnatifid, base cuneately attenuate, apex obtuse, rounded, or acute. Lower stem leaves with winged petiole 3.5–6 cm, base subclasping or not; leaf blade elliptic, 7–13 × 2–2.5 cm, margin sharply and pectinately dentate, otherwise similar to basal leaves. Middle stem leaves sessile, elliptic, 7–11.5 × 2–4 cm, base cordate and clasping, apex acute to acuminate, otherwise similar to lower stem leaves. Upper stem leaves similar to middle stem leaves but smaller upward on stem and apex more acuminate. Synflorescence corymbiform, with few to several capitula. Capitula with many florets; peduncle 1.5–4 cm or more. Involucre dark green to blackish, broadly cylindric to campanulate, 1–1.3 × 0.7–1 cm. Phyllaries abaxially glabrous or sparsely white hairy (especially at apex) or with black long simple hairs on midvein, apex acute; outer phyllaries narrowly triangular to lanceolate, longest ca. 6[–7] mm. Anther tube 3.5–4 mm. Achene ± cylindric to fusiform, 4–6 mm. Pappus white, ca. 6 mm. Fl. and fr. Jul–Sep.

Forests, forest margins, meadows, steppes; 1600–2200 m. Jilin, Liaoning [NE Korea].

Crepis coreana was originally described and until recently included in *Hieracium*. H. S. Pak (Fl. Coreana 7: 378. 1999) and Sennikov and I. D. Illarionova (Bot. Zhurn. 86(3): 37–59. 2001) first stated its actual affinity to *Crepis* and transferred the species correspondingly. It is possibly related to *C. sibirica*.

7. Crepis oreades Schrenk ex Fischer & C. A. Meyer, Enum. Pl. Nov. 2: 32. 1842.

山地还阳参 shan di huan yang shen

Crepis oreades var. *cinerascens* Fischer & C. A. Meyer; *Hieracioides oreades* (Schrenk ex Fischer & C. A. Meyer) Kuntze.

Herbs 10–25[–30] cm tall, perennial, rosulate, with taproot sometimes shoot-bearing. Caudex 1–3 cm, covered with brown leaf bases of former leaves, simple or branched and thus with 1 or few leaf rosettes. Stems one or a few, slender, ascending to erect, simple or forked, sparsely white arachnoid hairy apically [sometimes additionally with long dark green to blackish glandular hairs], usually ± leafless. Rosette leaves numerous, oblanceolate to elliptic, 4–8 × 0.5–1 cm, shallowly pinnatifid to pinnatisect, abaxially weakly white arachnoid hairy [sometimes additionally with glandular hairs], base attenuate into a petiole-like portion, margin sinuate-dentate or entire; lateral lobes narrowly triangular, lanceolate, or sublinear, apex acute; terminal lobe triangular to lanceolate, apex acute. Stem leaves 0–2, ± linear, reduced in size, margin entire, apex acute. Capitula 1 or 2 per stem, with many florets. Involucre narrowly campanulate, 9–12 × 5–8 mm. Phyllaries abaxially white arachnoid hairy especially along midvein [sometimes additionally with long dark green to blackish glandular hairs]; outer phyllaries linear-lanceolate, longest ca. 5 mm, apex acute; inner phyllaries ca. 12, adaxially appressed hairy, margin scarious, apex acute. Anther tube ca. 4 mm. Achene orangish brown, fusiform, 5–6 mm,

straight or subcurved, with 10–15 ribs, apex weakly attenuate. Pappus white, 4–6 mm. Fl. Jul.

Gravelly areas on mountain slopes; 1000–3800 m. Qinghai, Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan].

The diploid *Crepis oreades* and the tetraploid, hybridogenous *C. crocea* (presumably *C. oreades* × *C. bungei* Ledebour ex Candolle) are very similar. In China, *C. oreades* is of much more restricted distribution, and the very limited material seen is of the (typical) form with involucres and peduncles exclusively white arachnoid hairy, whereas in adjacent Kyrgyzstan and Tajikistan the form (described as *C. oreades* var. *cinerascens*) additionally with blackish glandular hairs on involucres and peduncles prevails.

8. Crepis crocea (Lamarck) Babcock, Univ. Calif. Publ. Bot. 19: 400. 1941.

北方还阳参 bei fang huan yang shen

Hieracium croceum Lamarck, Encycl. 2: 360. 1786; *Berinia crocea* (Lamarck) Schultz Bipontinus; *Crepis aurea* Reichenbach var. *crocea* (Lamarck) Candolle; *C. gmelinii* Schultes var. *grandifolia* Tausch; *C. pallasii* Turczaninow, nom. illeg. superfl.; *C. turczaninowii* C. A. Meyer; *Hieracioides crocea* (Lamarck) Kuntze.

Herbs 8–30 cm tall, perennial, rosulate, with taproot frequently shoot-bearing. Caudex 0.5–2 cm, simple or usually very shortly branched and thus with 1 or few leaf rosettes, covered with brown leaf bases of former leaves. Stems 1 or a few, slender, ascending to erect, simple or 1- to few forked, arachnoid hairy and with yellow longer and shorter strong glandular and non-glandular hairs especially apically, usually ± leafless. Rosette leaves numerous, oblanceolate to elliptic, 2.5–10 × 1–2.5 cm, shallowly pinnatifid to pinnatisect, both faces white arachnoid hairy and with strong yellowish glandular hairs, base attenuate into a petiole-like portion, margin sinuate-dentate or entire; lateral lobes narrowly triangular, lanceolate, or sublinear, apex acute; terminal lobe triangular to lanceolate, apex acute. Stem leaves 0–3, reduced in size, undivided, otherwise similar to rosette leaves or sessile. Capitula 1–4 per stem, with many florets. Involucre narrowly campanulate, 1–1.5 × 0.7–1 cm. Phyllaries green in fruit, abaxially with arachnoid hairs and with yellowish to yellowish green, strong, longer and shorter glandular and non-glandular hairs along midvein; outer phyllaries linear-lanceolate, longest 5–8 mm; inner phyllaries 12–14, adaxially weakly appressed hairy, margin conspicuously scarious, apex acute. Anther tube 4.5–5.5 mm. Achene dark to blackish brown, fusiform, 5–6 mm, straight or subcurved, with 10–15 ribs, apically attenuate. Pappus white, 7–8 mm. Fl. and fr. May–Aug.

Mountain slopes, loess hills, wastelands; 800–2900 m. Gansu, Hebei, Nei Mongol, Qinghai, Shaanxi, Shanxi [Mongolia, E Russia].

Crepis pallasii is a homotypic synonym of *Hieracium croceum*.

9. Crepis chrysantha (Ledebour) Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 11: 96. 1838.

金黄还阳参 jin huang huan yang shen

Hieracium chrysanthum Ledebour, Fl. Altaic. 4: 129. 1833; *Berinia chrysantha* (Ledebour) Schultz Bipontinus; *Crepis polytricha* (Ledebour) Turczaninow; *Hieracioides chrysantha* (Ledebour) Kuntze; *Hieracium frigidum* Steven ex Candolle; *H. polytrichum* Ledebour; *Soyeria chrysantha* (Ledebour) D. Dietrich.

Herbs 10–25 cm tall, perennial, with a vertical to oblique rhizome. Stems solitary or several, green or basally tinged with purple, unbranched or 1-branched, sparsely arachnoid hairy but apically densely so under capitula and with dark green to blackish long hairs. Basal leaves crowded, oblanceolate, narrowly elliptic-oblanceolate, or spatulate, 3–7 × 0.4–1.5 cm, glabrous or adaxially sparsely arachnoid hairy, base attenuate into a petiole-like portion, margin sinuate-dentate to subentire, apex obtuse. Stem leaves 2 or 3(or 4), similar to basal leaves but smaller and narrower, base attenuate, margin subentire, apex obtuse to acute. Capitulum solitary or 2, many flowered. Involucre dark green to blackish, campanulate, 1.4–1.6 × 0.8–1.2 cm. Phyllaries abaxially white arachnoid hairy and with dark green to blackish long hairs, apex acute to obtuse; outer phyllaries lanceolate, longest to 2/3 as long as inner ones, spreading-erect; inner phyllaries 15–18, adaxially appressed hairy. Anther tube 4–5 mm. Achene reddish brown to dark purple, fusiform, ca. 7 mm, straight or subcurved, with 12–15 ribs, apically attenuate. Pappus white, 5–7 mm, persistent. Fl. and fr. Jul–Sep.

Gravelly areas on floodplains, stony slopes; 500–1500 m. Xinjiang [Kazakhstan, Mongolia, Russia].

10. Crepis phoenix Dunn, J. Linn. Soc., Bot. 35: 511. 1903.

万丈深 wan zhang shen

Herbs 15–70 cm tall, perennial, with a strong taproot. Caudex woody, simple or branched, leafless. Stem dark green, erect, apically branched and setose, basally glabrous and with few scalelike leaves only in and above middle with well-developed leaves. Lower scalelike stem leaves lanceolate, 0.5–2 × ca. 0.3 mm, apex acute. Middle stem leaves sessile, lanceolate, narrowly elliptic, or narrowly elliptic-lanceolate, 2–8 × 0.3–2.5 cm, glabrous to setose, base cuneate, margin entire or sinuate-dentate, apex acute. Upper stem leaves similar to middle stem leaves but smaller, uppermost ones bractlike. Synflorescence corymbiform, with few to some capitula. Capitula with 20–25 florets; peduncle shorter or slightly longer than capitulum, slender. Involucre cylindric, 8–11 × 3–4 mm. Phyllaries abaxially somewhat tomentose and setose on midvein; outer phyllaries linear to linear-lanceolate, longest to 1/2 as long as inner ones, apex acute to obtuse; inner phyllaries 12–14, adaxially glabrous, margin broadly scarious, apex obtuse. Anther tube 4–5 mm. Achene brown, fusiform, 4–5 mm, with 10 ribs, apically attenuate. Pappus white, 5.5–6.5 mm. Fl. and fr. Jul–Oct.

● Mountain slopes; ca. 2000 m. Yunnan.

The entire plants are used medicinally.

Crepis phoenix and the following three species of fairly restricted distribution in chiefly S China are closely related and seem to form a complex, in which introgression and hybridization and diploid and polyploid cytotypes in all species occur. Delimitation of species in this complex is difficult and has already been stated as tentative by Babcock (Univ. Calif. Publ. Bot. 22: 632ff. 1947). A revision of the complex based on field and population studies is still needed.

11. Crepis bodinieri H. Léveillé, Bull. Géogr. Bot. 25: 15. 1915.

果山还阳参 guo shan huan yang shen

Herbs 40–50 cm tall, perennial, with a strong taproot. Caudex woody, simple or branched, leafless. Stems solitary or several, green, dark green, or tinged with purple, erect, apically branched, smooth, glabrous, basally only with a few scalelike leaves, in and above middle with well-developed leaves. Lower scalelike stem leaves linear-lanceolate, 5–10 × 1–3 mm. Middle stem leaves sessile, linear, 2–14 × 0.1–1 cm, abaxially somewhat canescent tomentulose, margin entire and revolute, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but smaller, uppermost ones bractlike. Synflorescence corymbiform, with few to some capitula. Capitula with 18–30 florets; peduncle shorter or slightly longer than capitulum, slender. Involucre cylindric, 8–10 × 3–4 mm. Phyllaries tomentulose; outer phyllaries linear to linear-lanceolate, longest 1/2–2/3 as long as inner ones, apex acute; inner phyllaries adaxially glabrous, apex obtuse. Anther tube ca. 4 mm. Achene brown, fusiform, ca. 4 mm, with 14 ribs, apically attenuate. Pappus white, 4–6 mm. Fl. and fr. Jun–Jul.

● Forests, thickets; 1500–2900 m. Xizang, Yunnan.

See remarks under *Crepis phoenix*, above.

12. Crepis rigescens Diels, Notes Roy. Bot. Gard. Edinburgh 5: 202. 1912.

还阳参 huan yang shen

Crepis rigescens subsp. *lignescens* Babcock.

Herbs 20–60 cm tall, perennial, with a strong taproot. Caudex woody, simple or branched, leafless. Stems solitary or several, erect, basally woody, sparsely to moderately and ± divaricately branched from base, middle, or near apex; branches sulcate to angular, yellowish striate, leafy, lower ones often sterile. Leaves pale yellowish green, glabrous; basal leaves very small, scalelike; middle stem leaves sessile, linear, 3–8 × 0.1–5 cm, rigid in texture, margin entire and revolute, apex acute. Synflorescence ± divaricately corymbiform, with few to several capitula. Capitula with 10–12 (sometimes more) florets. Involucre narrowly cylindric, 8–9 × 2–2.5 mm. Phyllaries glabrous or arachnoid hairy; outer phyllaries linear to lanceolate, longest ca. 1/2 as long as inner ones, apex acute; inner phyllaries with white scarious margin, apex acute. Anther tube ca. 3.5(–4.5) mm. Achene dark brown, fusiform, ca. 4 mm, with 10–16 ribs, apically attenuate. Pappus white, 4–5 mm. Fl. and fr. Feb–Jul.

Forest margins, along streams, wastelands, roadsides; 1600–3000 m. Sichuan, Yunnan [N Myanmar].

See note under *Crepis phoenix*, above.

13. Crepis lignea (Vaniot) Babcock, Univ. Calif. Publ. Bot. 22: 644. 1947.

绿茎还阳参 lü jing huan yang shen

Lactuca lignea Vaniot, Bull. Acad. Int. Géogr. Bot. 12: 318. 1903.

Herbs 15–40 cm tall, perennial, with a strong taproot. Caudex woody, simple or branched, leafless. Stem dark green to grayish green, erect, usually strongly and fastigiately branched from base or below middle; branches numerous, sulcate and angular. Leaves pale yellowish green, glabrous; basal and lower stem leaves inconspicuous, triangular to bractlike, apex acute; middle stem leaves filiform, to 3 × 0.5 cm, glabrous, margin entire. Uppermost stem leaves linear-subulate, bractlike, glabrous. Synflorescence virgately corymbiform, congested, with rather many capitula. Capitula with 7–12 florets. Involucre narrowly cylindric, 7–9 × 1.5–2.5 mm, glabrous or especially basally with sparse arachnoid and short glandular hairs. Outer phyllaries linear to lanceolate, longest 1/3–1/2 as long as inner ones; inner phyllaries adaxially glabrous, margin scarious, apex acute. Anther tube ca. 3.5 mm. Achene brown, fusiform, 4–5 mm, subcurved, with 10–12 equal ribs, apex attenuate or with beak to 1.5 mm. Pappus white, 4–5 mm. Fl. and fr. Feb–Aug.

Sunny mountain slopes; 1500–2700 m. Guangxi, Guizhou, Sichuan, Yunnan [Laos, N Thailand, S Vietnam].

The roots of *Crepis lignea* are used medicinally.

See note under *Crepis phoenix*, above.

14. Crepis napifera (Franchet) Babcock, Univ. Calif. Publ. Bot. 22: 629. 1947.

芜菁还阳参 wu jing huan yang shen

Lactuca napifera Franchet, J. Bot. (Morot) 9: 292. 1895; *Prenanthes chaffanjonii* H. Léveillé.

Herbs 40–150 cm tall, perennial, rosulate. Taproot cylindric to narrowly turniplike, ca. 1 cm in diam. Caudex 0.5–3 cm, woody, sometimes branched, with rather sparse leaf rosette and below covered with bases of old leaves and brown lanate. Stem slender, erect, unbranched in proximal portion, usually leafless, apically with narrow synflorescence. Rosette leaves obovate to oblanceolate, 5–26 × 2–6.5 cm, on both faces with short stiff subulate hairs, base attenuate into a 0.5–3 cm petiole-like portion, margin entire or sinuate-dentate to shallowly pinnatifid with orbicular to broadly triangular segments, apex obtuse to rounded and mucronulate or more rarely acute. Stem leaves (if present in lower part) similar to rosette leaves but smaller. Synflorescence racemiform to very narrowly paniculiform, with some to numerous capitula. Capitula with 5–10 florets; peduncle filiform, 1–5 mm. Involucre cylindric, 7–9 × 2–3 mm. Phyllaries green to dark green, ciliate near and at apex otherwise both faces glabrous; outer phyllaries lanceolate, longest 1/3–1/2 as long as inner ones, apex acute; inner phyllaries 5(or 6), apex acute to obtuse. Anther tube 3.5–4 mm. Style branches dark (blackish) upon drying. Achene pale brown, cylindric to fusiform, ca. 4 mm, with 10 ribs, apically attenuate. Pappus yellowish white, ca. 4 mm. Fl. and fr. Jun–Oct.

● Mountain slopes, forests in river valleys; 1400–3300 m. Guizhou, Sichuan, Yunnan.

15. Crepis subscaposa Collett & Hemsley, J. Linn. Soc., Bot. 28: 78. 1890.

抽茎还阳参 chou jing huan yang shen

Herbs 30–50 cm tall, perennial, rosulate. Taproot woody.

Caudex woody, with rather sparse leaf rosette and 1–3 stems. Stems erect, apically sparsely branched and white pubescent, almost leafless. Rosette leaves oblanceolate to elliptic, 5–10 × 2–3 cm, both surfaces pubescent with short glandular hairs, base attenuate into a short winged petiole-like portion, margin denticulate and irregularly sinuate to dentate, apex obtuse to acute. Stem leaves (if present) few, remote, bractlike, narrowly lanceolate, apex acute. Synflorescence laxly corymbose, with few to some capitula. Capitula with 20–30 florets; peduncle wiry, 1–4 cm. Involucre broadly cylindric to narrowly campanulate, 7–10 × 4–6 mm. Phyllaries sparsely pubescent with white partly glandular hairs; outer phyllaries lanceolate to linear-lanceolate, longest ca. 1/2 as long as inner ones, apex acute; inner phyllaries with short blackish rigid subulate hairs on midvein, adaxially glabrous, apex obtuse. Achene dark brown, fusiform, 5–6.5 mm, with 10–12 echinulate ribs, apically strongly attenuate. Pappus white or pale yellowish, 4–5 mm. Fl. and fr. Jul–Aug.

Mountain slopes, moist pastures, fields; 1400–2200 m. Yunnan [N Laos, N Myanmar].

16. Crepis darvazica Krascheninnikov, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 1: 182. 1933.

新疆还阳参 xin jiang huan yang shen

Crepis rigida Waldstein & Kitaibel var. *songorica* Karelin & Kirilov; *C. songorica* (Karelin & Kirilov) Babcock.

Herbs 20–60 cm tall, perennial, with a taproot. Stems solitary or more rarely 2–4, from a short woody caudex, erect, sparsely branched apically or rarely from middle, sparsely white arachnoid hairy and especially proximally with rigid subulate partly glandular hairs, covered with leaf bases of former leaves, leafy. Basal and lower stem leaves elliptic-oblanceolate to oblanceolate, 5–24 × 2–5 cm, both faces with rigid mostly glandular hairs but especially abaxially, base attenuate, margin sinuate-dentate, apex obtuse to acute. Middle and upper stem leaves ovate to narrowly elliptic-lanceolate, base auriculately clasping, margin sparsely dentate or entire, apex acute to acuminate, otherwise similar to lower leaves; uppermost stem leaf reduced, bractlike. Synflorescence laxly corymbiform, with few to several capitula. Peduncle 1–6 cm, straight or slightly curved. Involucre campanulate, 1.2–1.6 × 0.6–1 cm. Phyllaries abaxially white arachnoid hairy and especially basally and along midvein with ± dense yellowish brown short rigid glandular hairs; outer phyllaries triangular-ovate, triangular, or lanceolate, longest 1/3–2/3 as long as inner ones, apex ± acute; inner phyllaries 12–14, adaxially glabrous, margin scarious, apex obtuse. Anther tube 4.5–5.5 mm. Achene dark reddish brown, fusiform, 7–10 mm, with 16–20 ribs. Pappus white, 8–10 mm. Fl. and fr. Jun–Aug.

Rocky or gravelly mountain slopes; 1300–2600 m. Xinjiang [E Kazakhstan, Kyrgyzstan, Tajikistan].

Crepis darvazica has been reported generally from the border range between China, E Kyrgyzstan, and NE Tajikistan (Czerepanov, Fl. URSS 29: 633. 1966), but so far no substantiated records from Chinese territory are known (C. H. An, Fl. Xinjiang. 5: 456. 1999). The above description is based on material from E Kazakhstan and the descriptions by Czerepanov (loc. cit.) and Babcock (Univ. Calif. Publ. Bot. 22: 426. 1947).

17. Crepis shihii Tzvelev, Bot. Zhurn. 92: 1749. 2007.

全叶还阳参 quan ye huan yang shen

Crepis integrifolia C. Shih, Acta Phytotax. Sin. 33: 191. 1995, not Vest (1820).

Herbs, perennial, with a horizontal rhizome. Stem solitary, ca. 25 cm tall, slender, erect, apically sparsely branched and with blackish stipitate glandular hairs, leafy. Basal leaves incompletely known, lanceolate, small, margin entire or subentire, withered at anthesis. Lower and middle stem leaves sessile, lanceolate to oblanceolate, 3.5–5 × 1–2 cm, glabrous, base auriculately clasping, margin entire, apex rounded and mucronulate. Upper stem leaves bractlike, lanceolate. Synflorescence laxly corymbiform, with 3–5 capitula. Capitula with 20–30 florets; peduncles usually 1–9 cm, slender. Involucre cylindric to narrowly campanulate, 8–10 × 4–6 mm. Phyllaries green to blackish green, abaxially with blackish stipitate glandular hairs on midvein; outer phyllaries lanceolate, longest to 4 mm; inner phyllaries 8–10?, adaxially glabrous. Anther tube 3–3.5 mm. Style branches yellow. Achene yellowish brown, fusiform, ca. 5 mm, with 15 ribs, apex truncate. Pappus white, ca. 6 mm. Fl. and fr. Aug.

● Grasslands; 1300–1400 m. N Xinjiang (Altay Shan).

Crepis shihii is a conspicuous species of unclear affinities only known from the type collection and superficially appears to be a diminutive version of *C. darvazica*.

18. Crepis tianshanica C. Shih, Acta Phytotax. Sin. 33: 190. 1995.

天山还阳参 tian shan huan yang shen

Pseudoyoungia tianshanica (C. Shih) D. Maity & Maiti; *Tibetoseris tianshanica* (C. Shih) Tzvelev.

Herbs 3–5 cm tall, perennial. Stem erect or ascending-erect, pubescent, leafy. Leaves oblanceolate, 2.5–4 × 0.5–0.8 cm, lyrately pinnatipartite to pinnatisect, both faces sparsely pubescent or abaxially glabrous, base attenuate or abruptly narrowed into a petiole-like portion; lateral lobes 3 or 4 pairs, triangular, rhomboid, or irregularly rhomboid, margin entire, apex acute, obtuse, or rounded; terminal lobe elliptic, ovate, hastate, or sagittate, apex obtuse to acute. Capitula 2, terminal. Involucre cylindric to narrowly campanulate, ca. 1.2 cm. Phyllaries dark, abaxially sparsely arachnoid hairy and with blackish multicellular hairs on midvein; outer phyllaries narrowly elliptic-lanceolate, longest more than 1/2 as long as inner ones, apex acute; inner phyllaries adaxially glabrous, apex acute to obtuse. Achene not seen when mature. Pappus white, ca. 4 mm. Fl. Jul.

● Mountain slopes; ca. 2600 m. Xinjiang (Tian Shan).

Crepis tianshanica is an insufficiently known species due to the lack of mature achenes in the single collection known. For the time being, we follow the generic assignment to *Crepis* by Sennikov (Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 105: 66–69. 2000), rather than to *Askellia* ("ex affinitate *C. flexuosae*," C. Shih, Acta Phytotax. Sin. 33: 190. 1995) or *Youngia* (D. Maity & Maity, Compositae Newslett. 48: 33. 2010, under *Pseudoyoungia*).

66. YOUNGIA Cassini, Ann. Sci. Nat. (Paris) 23: 88. 1831.

黄鹌菜属 huang an cai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Pseudoyoungia D. Maity & Maiti.

Herbs, perennial or annual, acaulescent or caulescent, often ± rosulate, glabrous or somewhat to sparsely arachnoid hairy or pubescent. Synflorescence corymbiform or paniculiform-corymbiform, exceptionally secundly racemiform. Capitula with 5–25 florets. Involucre cylindric, cylindric-campanulate, campanulate, or broadly cylindric. Phyllaries abaxially glabrous or more rarely somewhat arachnoid hairy, very rarely glandular; outer phyllaries few to several, centripetally longer, at most 1/4(–1/2) as long as inner ones; inner phyllaries usually linear-lanceolate, equal in length, midvein subapically crested and corniculate or flat. Receptacle naked. Florets yellow. Achene ± fusiform, columnar, or ± cylindric, inconspicuously compressed or subcompressed, with 4 or 5 main ribs each accompanied by (1 or)2 or more slender secondary ribs, ribs usually finely spiculate especially apically, apex attenuate or rarely with a stout short beak. Pappus white, rarely gray or pale brownish, scabrid.

About 30 species: E Asia; 28 species (22 endemic) in China.

The circumscription of *Youngia* has recently been changed by Sennikov and I. D. Illarionova (Komarovia 5: 96. 2008) based, in particular, on carpological analyses. Three species groups have been segregated into three newly established separate genera: *Crepidifolium*, *Sonchella*, and *Tibetoseris*. *Crepidifolium* includes Babcock and Stebbins's (Publ. Carnegie Inst. Washington 484: 25. 1937) single species of their (not validly published) *"Y.* sect. *Crepidopsis,"* meanwhile divided into three separate species. Most recent molecular phylogenetic analyses of the Crepidinae by J. W. Zhang et al. (in prep.) on the one hand confirmed that *Crepidifolium* is not part of *Youngia*, but on the other hand revealed that it is actually nested within *Crepidiastrum*, see there. *Sonchella* unites *Y. stenoma* of Babcock and Stebbins's (not validly published) *"Y.* sect. *Stenophytum"* and a second species formerly treated as *Prenanthes angustifolia* or *Crepis pratensis*. This genus has been confirmed in the molecular phylogenetic analyses by J. W. Zhang et al. (in prep.) as independent and is treated as such here. *Tibetoseris* included the five species of Babcock and Stebbins's (not validly published) *"Y.* sect. *Desiphyllum"* and a few later additions from China. *Tibetoseris* was most recently recircumscribed by D. Maity and Maiti (Compositae Newslett. 48: 22–42. 2010) to include only *T. depressa*, while the other species, considered from morphology as unrelated, were segregated into the newly established genus *Pseudoyoungia*. While their assumption of *Tibetoseris* being diphyletic has been confirmed in the molecular phylogenetic analyses by J. W. Zhang et al. (in prep.), the exclusion of the species united in *Pseudoyoungia* from *Youngia* has not; they appear clearly nested in *Youngia*. *Pseudoyoungia* is here therefore sunk in the synonymy of *Youngia*. Finally, examination of the type material of *Y. blinii*, considered as an unusual and isolated species of *Youngia* since its inclusion by Babcock and Stebbins (Univ. Calif. Publ. Bot 18(11): 227–229. 1943, as *Y. setigera*), revealed that it is grossly misplaced in *Youngia* but conveniently fits into *Dubyaea*, where it is transferred in the present treatment. The genus is still in need of a revision at species level. Many species are known from few collections only and their justifications need to be confirmed by a thorough study of character variation on the basis of more material. The current treatment should be used with critical caution.

1a. Plants ca. 5(–8) cm tall, very rarely taller (to 15 cm) and acaulescent or stem very short and branched within or slightly above leaf rosette with capitula few to several, clustered; involucre 8–12 mm with longest outer phyllary 1/3–1/2(–2/3) as long as inner ones.
  2a. Peduncle slender; involucre 1.2–1.6 cm; pappus 10–11 mm ..... 3. *Y. simulatrix*
  2b. Peduncle capillaceous; involucre 0.8–1.1 cm; pappus 5–7 mm.
    3a. Phyllaries abaxially arachnoid hairy ..... 6. *Y. sericea*
    3b. Phyllaries abaxially glabrous.
      4a. Involucre 10–11 mm; longest outer phyllary 1/3–2/3 as long as inner ones; inner phyllaries adaxially appressed pubescent ..... 7. *Y. conjunctiva*
      4b. Involucre 8–10 mm; longest outer phyllary 1/3–1/2 as long as inner ones; inner phyllaries adaxially glabrous.
        5a. Longest outer phyllary to 1/3 as long as inner ones; midvein of inner phyllaries subapically plane ..... 4. *Y. gracilipes*
        5b. Longest outer phyllary to 1/2 as long as inner ones; midvein of inner phyllaries subapically crested or corniculate ..... 5. *Y. cristata*
1b. Plants caulescent, usually very distinctly so, or if stem very short then capitula not clustered but all borne distinctly above leaf rosette and longest outer phyllary usually at most 1/4 as long as inner ones (if 1/3–1/2(–2/3) as long see *Y. conjunctiva* above); involucre 5–13 mm.
  6a. Pappus ash-gray, yellowish brown, or pale brown.
    7a. Pappus ash-gray; synflorescence corymbiform on a stem with well-developed distant leaves.
      8a. Peduncle and involucre ± shortly glandular hairy (rarely glabrous); midvein of inner phyllaries subapically always plane; style branches yellow upon drying ..... 1. *Y. cineripappa*
      8b. Peduncle and involucre glabrous; midvein of some inner phyllaries subapically crested or corniculate; style branches brown or green upon drying ..... 2. *Y. atripappa*
    7b. Pappus yellowish brown or pale brown; synflorescence corymbiform on a leafless stem, or else not corymbiform.

9a. Synflorescence corymbiform; capitula erect, with ca. 5 florets; involucre 6–7 mm ..... 27. *Y. szechuanica*
9b. Synflorescence secundly racemiform; capitula nodding, with 10–20 florets; involucre 10–13 mm ..... 28. *Y. racemifera*

6b. Pappus white.
10a. Involucre 4–7 mm; synflorescence (except in depauperate plants) moderately to richly branched, with some, many, or numerous capitula; inner phyllaries with midvein subapically strictly plane.
11a. Leaves undivided; basal leaves with petiole to 15 cm, as long as hastate-cordate blade ..... 22. *Y. longipes*
11b. Leaves except early basal ones always pinnately lobed; basal leaves with basal petiole-like portion much shorter than remainder of leaf.
12a. Basal, lower, and middle stem leaves bipinnately lobed, lateral lobes as broad as terminal lobe ..... 21. *Y. rosthornii*
12b. Leaves at most pinnately lobed, lateral lobes usually much narrower and smaller than terminal lobe.
13a. Plants annual to perennial; stem leaves always well developed, pinnatipartite to pinnatisect, lateral lobes of all leaves ovate or elliptic, terminal lobe long acuminate; involucre 6–7.5 mm; achene 2.5–3 mm ..... 20. *Y. heterophylla*
13b. Plants strictly annual; stem leaves mostly soon reduced and undivided, or if well developed and pinnately lobed then lateral lobes triangular or rhomboidal, terminal lobe obtuse, acute, or shortly acuminate; involucre 4–5(–7) mm; achene 1.5–2.5 mm.
14a. Achene light brown, dark reddish, or purplish brown, apex strongly attenuate; pappus persistent ..... 24. *Y. japonica*
14b. Achene clear red, apex contracted into a stout 0.2–0.4 mm beak; pappus ± deciduous.
15a. Involucre 4–6 mm; pappus 2.5–3 mm ..... 25. *Y. erythrocarpa*
15b. Involucre 6–7 mm; pappus 3–4 mm ..... 26. *Y. rubida*

10b. Involucre (6–)7–10(–13) mm; synflorescence poorly to moderately branched, with few, some, or more rarely with many capitula; inner phyllaries either all with midvein plane or some with midvein subapically crested or corniculate.
16a. Midvein of all inner phyllaries plane.
17a. Inner phyllaries adaxially glabrous; later basal and stem leaves pinnatifid to pinnatipartite, rachis often pectinate between lateral lobes ..... 17. *Y. wilsonii*
17b. Inner phyllaries adaxially appressed pubescent; later basal and stem leaves pinnatisect, rachis not pectinate between lateral lobes.
18a. Lobes of pinnate leaves basally often with a large tooth; achene 3–3.5 mm ..... 18. *Y. henryi*
18b. Lobes of pinnate leaves entire; achene 2–3 mm.
19a. Plants delicate, 10–30 cm tall; involucre ca. 7 mm; achene 2–2.5 mm ..... 15. *Y. hastiformis*
19b. Plants usually rather robust, to 60 cm tall; involucre 7–11 mm; achene 2.5–3 mm ..... 16. *Y. prattii*
16b. Midvein of at least some inner phyllaries subapically crested or corniculate.
20a. Rosette leaves contracted or attenuate into a very long (to 9 cm) inconspicuously winged petiole-like basal portion at least as long as or longer than remainder of leaf ..... 19. *Y. terminalis*
20b. Rosette leaves without petiole-like portion, or if with one then distinctly shorter than remainder of leaf.
21a. Involucre 8–13 mm; inner phyllaries adaxially pubescent; pappus 5–9 mm.
22a. Plants to 100 cm tall; involucre (0.8–)0.9–1.3 cm; longest outer phyllaries 1.5–3 mm ..... 8. *Y. paleacea*
22b. Plants at most 30 cm tall; involucre 0.8–1 cm; longest outer phyllaries ca. 1.5 mm ..... 9. *Y. pilifera*
21b. Involucre 6–8 mm; inner phyllaries adaxially glabrous or appressed pubescent; pappus 2.5–5.5 mm.
23a. Stem very slender or capillaceous, almost leafless or leafless with 1–5 capitula.
24a. Involucre ca. (7–)8 mm; pappus 5–5.5 mm ..... 14. *Y. kangdingensis*
24b. Involucre 6–7 mm; pappus 2–5 mm.
25a. Plants delicate, 3–10 cm tall; rosette leaves 1–7 × 0.3–1 cm; stem capillaceous; pappus 4–5 mm ..... 13. *Y. yilingii*
25b. Plants more robust, 10–15 cm tall; rosette leaves 5–10 × 1–2 cm; stem slender; pappus ca. 2.5 mm ..... 23. *Y. bifurcata*
23b. Stem usually more robust, usually with few leaves and more than 5 capitula.

26a. Achene 2–2.5 mm; inner phyllaries adaxially pubescent.
27a. Leaves pubescent; longest outer phyllary to 1 mm; inner phyllaries adaxially densely appressed hairy ..... 12. *Y. mairei*
27b. Leaves glabrous; longest outer phyllary 1–2 mm; inner phyllaries adaxially sparsely appressed hairy ..... 15. *Y. hastiformis*
26b. Achene 3–4 mm; inner phyllaries adaxially glabrous or with only few appressed hairs.
28a. Stems especially at bifurcations, peduncles, and abaxial face of leaves brown arachnoid hairy; synflorescence with to 25 capitula ..... 10. *Y. fusca*
28b. Stems, peduncles, and leaves mostly rather sparsely pale or white arachnoid hairy; synflorescence with less than 10 capitula ..... 11. *Y. lanata*

1. Youngia cineripappa (Babcock) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 60. 1937.

鼠冠黄鹌菜 shu guan huang an cai

Crepis cineripappa Babcock, Univ. Calif. Publ. Bot. 14: 325. 1928.

Herbs 40–150 cm tall, perennial. Rhizome horizontal or oblique?, with fleshy fibrous roots. Caudex short. Stems mostly solitary or more rarely few, erect, branched only apically, glabrous, leafy. Basal leaves obovate to oblanceolate, 6–25 × 2–4(–6) cm, undivided to pinnatifid or lyrately pinnatifid, glabrous, base attenuate into a cuneately winged petiole-like portion to 1/3 as long as leaf, margin subentire to sinuate-dentate, apex acute to obtuse; lateral lobes 4 or 5 pairs, triangular, broadly triangular-ovate, or elliptic, apex acute, obtuse, or rounded and mucronate; terminal lobe narrowly triangular, apex long acuminate. Stem leaves elliptic to lanceolate, 5–19 × 2–4(–7) cm, base attenuate into a short cuneately winged petiole-like portion, otherwise like basal leaves; uppermost stem leaves linear to subulate, reduced in size. Synflorescence corymbiform, with few to many capitula. Capitula with 14–20 florets; peduncle slender, usually with stipitate glandular hairs, rarely subglabrous. Involucre cylindric, 7–8 mm. Outer phyllaries 5 or 6, ovate to narrowly triangular, longest 1–1.5 mm, apex acute; inner phyllaries 8, abaxially with or rarely without stipitate glandular hairs on midvein, adaxially glabrous, midvein subapically plane, margin white scarious, apex obtuse to acute. Anther tube greenish to blackish. Style branches yellow upon drying. Achene brown, subfusiform, ca. 3.5 mm, subcompressed, ribs finely spiculate, somewhat more attenuate toward apex than base. Pappus grayish, 4–5 mm. Fl. and fr. Jun–Oct.

Moist areas by water in mountain valleys, grasslands on mountain slopes, sparse forests, thickets; 600–3000 m. Guangxi, Guizhou, Sichuan, Yunnan [NE India, ?Myanmar, N Vietnam].

2. Youngia atripappa (Babcock) N. Kilian, **comb. nov.**

纤细黄鹌菜 xian xi huang an cai

Basionym: *Crepis atripappa* Babcock, Univ. Calif. Publ. Bot. 14: 324. 1928; *C. gracilis* J. D. Hooker & Thomson ex C. B. Clarke; *Youngia gracilis* (J. D. Hooker & Thomson ex C. B. Clarke) Babcock & Stebbins (1937), not Miquel (1861); *Y. stebbinsiana* S. Y. Hu, nom. illeg. superfl.

Herbs 20–40 cm tall, perennial. Stem solitary, very slender, flexuous, erect, branched only apically, glabrous, leafy. Basal and lower stem leaves oblanceolate, 4–13 × 1–3 cm, both faces finely pubescent, base attenuate into a short cuneately winged petiole-like portion, margin coarsely sinuate-dentate, apex acuminate. Upper stem leaves similar to lower ones but smaller and elliptic to lanceolate; uppermost stem leaves linear or subulate, reduced in size. Synflorescence rather densely corymbiform, with few to several capitula. Capitula with ca. 15 florets; peduncle 1–1.5 cm, slender, glabrous. Involucre cylindric, 8–9 mm. Outer phyllaries 6 or 7, broadly ovate, ca. 1 mm, apex acute to obtuse; inner phyllaries 8, both faces glabrous, midvein subapically crested, margin white scarious, apex acute to obtuse. Anther tube and style branches green to blackish upon drying. Achene dark brown, subfusiform, ca. 4 mm, somewhat more attenuate toward apex than base, ribs finely spiculate. Pappus grayish, 4–5 mm. Fl. and fr. Jul–Aug.

Forest margins, thickets, grassy cliffs; ?3000–?3600 m. SE Xizang [Bhutan, India (Sikkim)].

The epithet of the earliest legitimate name of this species, *Crepis gracilis*, is not available in *Youngia*, because of *Y. gracilis* Miquel, and the corresponding combination by Babcock and Stebbins is thus illegitimate. Instead, the epithet of *C. atripappa*, which was included as a synonym by Babcock and Stebbins, is available and has to be taken up (*Vienna Code*, Art. 11.4). *Youngia stebbinsiana*, published by S. Y. Hu (Quart. J. Taiwan Mus. 22: 37. 1969) as a replacement name for *Y. gracilis* of Babcock and Stebbins, was thus nomenclaturally superfluous when published and is therefore illegitimate.

3. Youngia simulatrix (Babcock) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 39. 1937.

无茎黄鹌菜 wu jing huang an cai

Crepis simulatrix Babcock, Univ. Calif. Publ. Bot. 14: 329. 1928; *C. smithiana* Handel-Mazzetti; *Pseudoyoungia ladyginii* (Tzvelev) D. Maity & Maiti; *P. simulatrix* (Babcock) D. Maity & Maiti; ?*Taraxacum altune* D. T. Zhai & C. H. An; *Tibetoseris ladyginii* Tzvelev; *T. simulatrix* (Babcock) Sennikov.

Herbs less than 5(–8) cm tall, perennial, rosulate, subacaulescent, with ?taproot and lateral shoot-bearing roots giving rise to secondary rosette shoots. Caudex short, unbranched or weakly branched, with residues of old leaf bases. Rosette leaves oblanceolate, 1–6 × 0.5–1.5 cm, both faces glabrous or abaxially somewhat pilose and adaxially puberulent, base attenuate into a petiole-like portion, margin entire to sinuate-dentate or more rarely pinnatifid, apex acute, rounded, or shortly acuminate; lobes (if present) triangular-ovate, apex obtuse to acute. Capitula 1–10, clustered, directly from axils of rosette leaves or from a branched, 5–10 mm stalk, each with 13–20 florets; peduncle 0.2–2(–6) cm, slender, glabrous or pilose. Involucre

cylindric, 1.2–1.6 cm. Phyllaries dark green to pale yellowish green, abaxially glabrous, margin white scarious; outer phyllaries imbricate, ovate to lanceolate, longest 1/3–1/2 as long as inner ones, apex obtuse to acute; inner phyllaries 8–12, adaxially glabrous, apex acute. Anther tube and style yellow upon drying. Achene dark brown, ± fusiform, ca. 4 mm, ± compressed, apex truncate. Pappus white, 1–1.1 cm, persistent. Fl. and fr. Jul–Oct.

Grasslands on mountain slopes, gravelly areas on floodplains, grassy beaches in river valleys; 2700–5000 m. Gansu, Qinghai, Sichuan, Xizang [India (Sikkim), Nepal].

Tibetoseris ladyginii and *Taraxacum altune* are regarded as synonyms of *Youngia simulatrix* following Sennikov and I. D. Illarionova (Komarovia 5: 91. 2008) and not Ge and Zhai (Novon 9: 47. 1999).

4. Youngia gracilipes (J. D. Hooker) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 40. 1937.

细梗黄鹌菜 xi geng huang an cai

Crepis gracilipes J. D. Hooker, Fl. Brit. India 3: 396. 1881; *Pseudoyoungia angustifolia* (Tzvelev) D. Maity & Maiti; *P. gracilipes* (J. D. Hooker) D. Maity & Maiti; *Tibetoseris angustifolia* Tzvelev; *T. gracilipes* (J. D. Hooker) Sennikov; *T. gracilipes* subsp. *duthiei* D. Maity et al.

Herbs 3–10[–15] cm tall, perennial, rosulate, subacaulescent or dwarf, with taproot and lateral shoot-bearing roots giving rise to secondary rosette shoots. Caudex short, with residues of old leaf bases, not or weakly branched. Rosette leaves oblanceolate, elliptic, or narrowly elliptic, 2–5 × 0.3–1 cm, pinnatifid to pinnatipartite and sometimes lyrately so, sparsely pubescent, base attenuate into a petiole-like portion, margin entire to weakly sinuate-dentate; lateral lobes 3–6 pairs, opposite to subopposite, ovate to elliptic but basal lobes usually toothlike, apex rounded to obtuse; terminal lobe elliptic, apex rounded to obtuse. Capitula 3–14, clustered, directly from axils of rosette leaves or on a stalk, with 12–20(–30?) florets; stalk 1–4 cm, capillaceous, branched, sometimes reduced-leafy; peduncle capillaceous, 1–8 cm, ± pilose to apically ± tomentose, ± bracteate. Involucre broadly cylindric, 8–10 mm. Phyllaries dark to blackish green, abaxially glabrous; outer phyllaries lanceolate to linear-lanceolate, longest to 1/3 as long as inner ones, apex acute; inner phyllaries 8–10, adaxially glabrous, margin scarious, subapically usually plane, apex acute. Anther tube greenish to blackish. Style yellow upon drying. Achene dark, fusiform, ca. 4 mm, apex truncate. Pappus white, 5–7 mm, persistent. Fl. and fr. Jun–Sep.

Forests, forest margins, grasslands; 2700–4800 m. Sichuan, Xizang [Bhutan, N India, Nepal].

Plants in which a delicate, sparsely branched stem with 2 or more capitula and 1 or more leaves is developed have been described as a separate subspecies (under the name *Tibetoseris gracilipes* subsp. *duthiei*) from India, Nepal, and China (Xizang). Corroborating Babcock and Stebbins (Publ. Carnegie Inst. Washington 484: 42. 1937), we have the impression that such plants merely represent more robust forms and that the transitions are fluent. *Tibetoseris angustifolia*, described from a single collection, differs according to the protologue only by narrower leaves, which hardly justifies its recognition as a separate species. The following two species appear very close to *Youngia gracilipes*, and their delimitation should be reassessed on the basis of more material.

5. Youngia cristata C. Shih & C. Q. Cai, Acta Phytotax. Sin. 33: 186. 1995.

角冠黄鹌菜 jiao guan huang an cai

Pseudoyoungia cristata (C. Shih & C. Q. Cai) D. Maity & Maiti; *Tibetoseris cristata* (C. Shih & C. Q. Cai) Sennikov.

Herbs 3–5 cm tall, perennial, rosulate, subacaulescent. Taproot and lateral shoot-bearing roots giving rise to secondary rosette shoots. Caudex short, unbranched or weakly branched, with residues of old leaf bases. Rosette leaves oblanceolate, 2–4 × ca. 1 cm, pinnatifid to pinnatipartite, sparsely tomentose, base attenuate into a petiole-like portion, margin entire; lateral lobes 4–6 pairs, narrowly triangular but basal lobes usually toothlike, apex acute; terminal lobe with apex acute to acuminate. Capitula 3–14, clustered, directly from axils of rosette leaves or from a stalk, with 12–18 florets; stalk short, capillaceous, branched; peduncle capillaceous, 1–4 cm, ± pilose to apically ± tomentose, ± bracteate. Involucre cylindric, 8–10 mm. Phyllaries dark to blackish green, abaxially glabrous; outer phyllaries ovate to lanceolate, longest to 1/2 as long as inner ones, apex obtuse to acute; inner phyllaries 8–10, adaxially glabrous, margin scarious, subapically crested or corniculate, apex acute. Anther tube greenish upon drying. Achene not seen when mature. Pappus white, ca. 7 mm. Fl. Aug.

● Mountain slopes; ca. 3900 m. SE Xizang (Zayü).

6. Youngia sericea C. Shih, Komarovia 5: 48. 2007.

绢毛黄鹌菜 juan mao huang an cai

Pseudoyoungia sericea (C. Shih) D. Maity & Maiti; *Tibetoseris sericea* (C. Shih) Sennikov.

Herbs 3–6 cm tall, perennial, rosulate, subacaulescent. Taproot and lateral shoot-bearing roots giving rise to secondary rosette shoots. Caudex short, unbranched or weakly branched, with residues of old leaf bases. Rosette leaves oblanceolate to narrowly elliptic, 2–5 × 0.4–1.5 cm, pinnatipartite, base attenuate into a petiole-like portion; lateral lobes 4 or 5 pairs, opposite to obliquely opposite, narrowly triangular, basally broadly falcate; terminal lobe narrowly elliptic, elliptic-triangular, or orbicular, apex acute, obtuse, or rounded. Capitula 3–9, clustered, directly from axils of rosette leaves or on a stalk, with 9–15 florets; stalk capillaceous, short, branched; peduncle capillaceous, 1–3 cm, arachnoid hairy to tomentose, ± bracteate. Involucre cylindric, ca. 1 cm. Phyllaries dark green in fruit, arachnoid hairy; outer phyllaries narrowly ovate to lanceolate, longest ca. 1/3 of inner ones, apex obtuse to acute; inner phyllaries ca. 8, adaxially glabrous, margin broadly white membranous, apex acute to obtuse. Achene dark brown to blackish, subfusiform, 3.5–4 mm, apex truncate. Pappus white, ca. 6 mm, persistent. Fl. and fr. Jun–Sep.

● Gravelly mountain slopes, rocky slopes; 3300–3400 m. SE Xizang (Zayü).

From the place of its first publication (C. Shih, Acta Phytotax. Sin. 33: 185. 1995), the name *Youngia sericea* was not validly published because two specimens of different gatherings were simultaneously designated as types (see *Vienna Code*, Art. 37.1 and 37.2). The name was validated with its original authorship in a nomenclatural note by Sennikov in 2007, as given above.

7. Youngia conjunctiva Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 37. 1937.

甘肃黄鹌菜 gan su huang an cai

Crepis parva (Babcock & Stebbins) Handel-Mazzetti; *Pseudoyoungia conjunctiva* (Babcock & Stebbins) D. Maity & Maiti; *P. parva* (Babcock & Stebbins) D. Maity & Maiti; *Tibetoseris conjunctiva* (Babcock & Stebbins) Sennikov; *T. parva* (Babcock & Stebbins) Sennikov; *Youngia parva* Babcock & Stebbins.

Herbs 4–12 cm tall, perennial, rosulate. Taproot and short woody caudex with residues of old leaf bases. Stem solitary, erect, branched apically or from near base, densely tomentose but glabrescent with age, distantly leafy. Rosette leaves oblanceolate, 1.5–6 × 0.5–1.2 cm, both faces tomentulose to glabrescent, base attenuate into a petiole-like portion and semi-amplexicaul, margin sinuately to runcinately dentate and/or runcinately pinnatifid, apex obtuse to acute; lobes (if present) narrowly triangular, apex acute to acuminate. Stem leaves none or few, similar to rosette leaves but smaller, with narrower lobes, and apex acuminate. Synflorescence laxly corymbiform, with 4–8 capitula. Capitula with 13–18 florets; peduncle 1–6 cm, slender, densely tomentose. Involucre cylindric to campanulate, 1–1.1 cm. Phyllaries dark to blackish green, ciliate otherwise abaxially glabrous, apex acute; outer phyllaries lanceolate to linear-lanceolate, longest 1/3–1/2(–2/3) as long as inner ones; inner phyllaries 10–12, adaxially densely pubescent with appressed shiny hairs. Anther tube apically or entirely greenish. Style yellow upon drying. Achene not seen when mature. Pappus white, ca. 7 mm. Fl. Jul–Aug.

● Grassy slopes; 3800–4500 m. SW Gansu, N Sichuan.

Youngia conjunctiva and *Y. parva*, both only known from the type collections and simultaneously described by Babcock and Stebbins (Publ. Carnegie Inst. Washington 484: 35, 37. 1937), are strikingly similar in all features, except minor differences in the habit, and are from the same larger region adjacent to that of the supposed next relatives. The type of *Y. parva* has an apically branching stem of 2–3 cm, that of *Y. conjunctiva* one of 8–10 cm; their architecture, however, is basically identical. For these reasons it appears not justified to treat them as separate species, and they are here considered as conspecific. Doubts about their distinctness had already been expressed by Sennikov and I. D. Illarionova (Komarovia 5: 91. 2008). Additional collections and further studies of this apparently rare species would be desirable. Its systematic position in *Youngia* also needs confirmation.

8. Youngia paleacea (Diels) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 67. 1937.

羽裂黄鹌菜 yu lie huang an cai

Crepis paleacea Diels, Notes Roy. Bot. Gard. Edinburgh 5: 202. 1912; *C. yunnanensis* Babcock; *Youngia paleacea* subsp. *smithii* Babcock & Stebbins; *Y. paleacea* subsp. *yunnanensis* (Babcock) Babcock & Stebbins.

Herbs 30–100 cm tall, perennial. Taproot woody. Caudex often with residues of old leaf bases. Stem solitary, slender, erect, branched from near base or only apically, glabrous or very sparsely white tomentose, distantly leafy or more rarely almost leafless. Basal and lower stem leaves oblanceolate, elliptic, or narrowly elliptic, 2–19 × 0.5–4 cm, pinnatifid, pinnatipartite, or runcinately or lyrately so, both surfaces ± pubescent with pale brown hairs, base attenuate into a winged petiole-like portion; lateral lobes 2–7 pairs, opposite to obliquely opposite, ± broadly triangular to triangular-ovate, margin entire or sinuate-dentate, apex acute, long acute, obtuse, or rounded and often mucronate; terminal lobe lanceolate, triangular, or falcate, margin dentate or entire. Middle and upper stem leaves similar to lower ones but smaller, narrower, and divided or undivided; uppermost stem leaves reduced, undivided, and bractlike. Synflorescence corymbiform, with few to many capitula. Capitula with 9–16 florets; peduncle usually 0.5–3 cm, slender. Involucre cylindric, (0.8–)0.9–1.3 cm. Outer phyllaries broadly ovate to lanceolate, longest 1.5–2(–3) mm, apex acute; inner phyllaries ca. 8, abaxially glabrous, adaxially appressed hairy, midvein subapically crested or corniculate, margin white scarious, apex acute. Anther tube greenish. Style branches yellow upon drying. Achene dark brown to blackish, subfusiform, 3–4 mm, ribs finely spiculate, apex attenuate. Pappus white, 5–7(–9) mm. Fl. and fr. May–Sep. 2*n* = 32*.

● Forests on mountain slopes, mountain valleys, forest margins, thickets, grassy slopes; 1800–3800 m. Gansu, Sichuan, Xizang, Yunnan.

Youngia paleacea is a fairly polymorphic species, probably representing a polyploid complex as was first noted by Babcock and Stebbins (Publ. Carnegie Inst. Washington 484: 68. 1937). Further studies are required also for the following species, *Y. pilifera*.

9. Youngia pilifera C. Shih, Acta Phytotax. Sin. 33: 183. 1995.

糙毛黄鹌菜 cao mao huang an cai

Herbs 8–30 cm tall, perennial, caudex often with residues of old leaf bases. Stem slender, erect, branched from base or middle third, almost leafless; branches sericeous below, glabrous above. Basal leaves elliptic, ovate-elliptic, broadly ovate, oblanceolate, or orbicular, 2–5 × 0.6–1.5 cm, lyrately pinnatipartite or undivided, densely strigose, base attenuate or constricted into a winged petiole-like portion, apex rounded to obtuse; lateral lobes 2–4 pairs, triangular to elliptic, margin entire, apex acute, rounded, or obtuse; terminal lobe elliptic, hastate, or irregularly hastate, much larger than lateral ones, margin entire or retrorsely dentate, apex rounded to obtuse. Stem leaves 1 or 2, narrowly elliptic to linear, reduced in size, apex long acuminate. Synflorescence corymbiform to paniculiform-corymbiform, with few to some capitula. Capitula with ca. 11 florets. Involucre narrowly cylindric, 8–10 mm. Phyllaries dark green, abaxially glabrous; outer phyllaries broadly ovate, longest ca. 1.5 mm, apex acute to obtuse; inner phyllaries ca. 8, adaxially appressed hairy, midvein subapically crested or corniculate, margin white scarious, apex acute to obtuse. Achene not seen when mature. Pappus white, ca. 5 mm. Fl. Jul.

● Thickets in mountain valleys, moist areas in river valleys; 3200–3600 m. W Sichuan (Kangding).

Youngia pilifera is close to the polymorphic *Y. paleacea* and possibly only a delicate dwarf morph of the latter. See also note under *Y. paleacea*.

10. Youngia fusca (Babcock) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 76. 1937.

厚绒黄鹌菜 hou rong huang an cai

Crepis fusca Babcock, Univ. Calif. Publ. Bot. 14: 327. 1928; *C. blinii* H. Léveillé (1915), not H. Léveillé (1914).

Herbs 20–40 cm tall, perennial, rosulate. Taproot slender. Caudex with residues of old leaf bases. Stem solitary, erect, branched from near base or higher up, sparsely brown arachnoid hairy and somewhat more densely so at bifurcations, distantly leafy. Rosette and lower stem leaves oblanceolate, 4–10 × 1–3 cm, lyrately or runcinately pinnatipartite to pinnatisect, abaxially ± strongly brown arachnoid hairy, adaxially short brown crinkled hairy, base attenuate into a short ± winged petiole-like portion and semiamplexicaul, margin sinuate-dentate; lateral lobes ovate, triangular, or elliptic, apex obtuse to acute; terminal lobe obovate, ovate, or broadly triangular, apex obtuse to acute. Middle stem leaves (if any) ± elliptic, smaller, otherwise similar to lower leaves; upper stem leaves linear, subulate, or bractlike, reduced in size, usually not divided. Synflorescence corymbiform, with to 25 capitula. Capitula with 10–12 florets; peduncle capillaceous, 0.2–2.5 cm, ± brown arachnoid hairy. Involucre narrowly cylindric, 7–8 mm, abaxially glabrous. Outer phyllaries broadly ovate, longest 1–1.5 mm, apex subacute; inner phyllaries 8, adaxially glabrous or only with a few appressed hairs, midvein often subapically crested, margin narrowly white scarious, apex subacute. Anther tube green. Style branches yellow upon drying. Achene dark brown, columnar, 3–3.5 mm, ribs finely spiculate, apex attenuate. Pappus white, 4–5 mm. Fl. and fr. May–Sep.

● By streams, trailsides in thickets, mountaintops; 2000–3500 m. Guizhou, Yunnan.

11. Youngia lanata Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 76. 1937.

绒毛黄鹌菜 rong mao huang an cai

Youngia nujiangensis C. Shih.

Herbs 9–30 cm tall, perennial, rosulate. Taproot slender, with shoot-bearing lateral roots. Caudex short, with residues of old leaf bases. Stems solitary or few, slender, ± erect, pale arachnoid hairy especially at bifurcations, sparsely leafy. Rosette leaves obovate to oblanceolate, 3–10 × 0.5–1.5 cm, almost undivided, or ± lyrately pinnatifid to pinnatisect, abaxially pale arachnoid hairy, adaxially pubescent with short pale crinkled hairs, base attenuate into a short ± winged petiole-like portion, margin sinuate-dentate, apex obtuse to acute; lateral lobes ovate to triangular, apex rounded to acute and mucronulate. Stem leaves 1–3, linear, reduced in size, undivided. Synflorescence corymbiform, with few to less than 10 capitula. Capitula with 9–11 florets; peduncle capillaceous, 4–15 mm, ± white arachnoid hairy. Involucre narrowly cylindric, 6–8 mm, in fruit to 9 mm, abaxially glabrous. Outer phyllaries ovate, longest 1–1.5 mm, apex acute; inner phyllaries 8, adaxially glabrous, midvein often subapically with small crest or claw, margin white scarious, apex acute. Anther tube greenish yellow. Style branches yellow upon drying. Achene dark brown, fusiform, ca. 3.5 mm, subcompressed, ribs finely spiculate. Pappus white, 3.5–5 mm. Fl. May–Jun.

● Among rocks, rock crevices, wastelands; 1700–2700 m. Yunnan.

Comparison of material determined by Babcock as *Youngia lanata*, which includes the isotype of *Y. nujiangensis* (GH), revealed both taxa to be conspecific. Part of the inner phyllaries of the type collection of *Y. nujiangensis* are subapically crested or corniculate as in *Y. lanata*.

12. Youngia mairei (H. Léveillé) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 77. 1937.

东川黄鹌菜 dong chuan huang an cai

Crepis mairei H. Léveillé, Repert. Spec. Nov. Regni Veg. 12: 531. 1913.

Herbs 15–25 cm tall, perennial, rosulate. Taproot slender. Caudex with residues of old leaf bases. Stem solitary, slender, erect, branched from middle third or higher, glabrous. Rosette leaves oblanceolate, 3–7 × 1–1.5 cm, undivided, both faces finely pubescent with yellow or brown many-celled hairs, base attenuate into a short petiole-like portion, margin mucronately sinuate-dentate, apex acute to acuminate. Stem leaves few, linear, reduced in size. Synflorescence corymbiform, with few to several capitula. Capitula with ca. 12 florets; peduncle capillaceous, 0.5–1.2 cm, ± subtomentulose. Involucre cylindric to narrowly campanulate, 6–7 mm, abaxially glabrous. Outer phyllaries ovate, longest ca. 1 mm; inner phyllaries 8, adaxially pubescent with very shortly appressed shiny hairs, midvein subapically often somewhat crested, margin ± white scarious, apex acute and ciliate. Anther tube and style branches yellow upon drying. Achene brownish purple, columnar, ca. 2.5 mm, ribs finely spiculate, apically subattenuate. Pappus white, 3.5–4 mm. Fl. Jun.

● Among rocks; ca. 2600 m. Yunnan.

Youngia mairei is only known from the type collection made in 1912 and is close to *Y. lanata* and *Y. fusca*.

13. Youngia yilingii C. Shih, Acta Phytotax. Sin. 33: 186. 1995.

艺林黄鹌菜 yi lin huang an cai

Herbs 3–10 cm tall, perennial, rosulate, delicate. Caudex strong, branching with age, with residues of old leaf bases. Stem solitary, capillaceous, simple or 1- or 2-branched from near base or higher up, sparsely hairy, leafless. Basal leaves spatulate, elliptic, or oblanceolate, 1–7 × 0.3–1 cm, both faces glabrous or sparsely white tomentose but abaxially glabrescent, undivided, weakly pinnatifid with 1 or 2 pairs of obtusely triangular to lanceolate lateral lobes, or pinnatipartite to pinnatisect with 2–6 opposite or alternate pairs of triangular to ovate, rounded to acute lateral lobes, base attenuate into a petiole-like portion, margin entire to sinuate-dentate, apex obtuse to acute. Capitulum solitary or synflorescence laxly corymbiform, with 2–5 capitula. Capitula with 9–15 florets. Involucre narrowly campanulate, 6–7 mm. Phyllaries abaxially glabrous; outer phyllaries narrowly ovate, longest 1–1.5 mm, apex acute to obtuse; inner phyllaries 8, adaxially sparsely appressed hairy, midvein subapically mostly somewhat crested or corniculate, apex ± acute. Anther tube and style branches yellow upon drying. Achene dark brown, fusiform, 2.5–3 mm, ribs finally spiculate, apex attenuate. Pappus white, 4–5 mm. Fl. and fr. May–Jun.

● Rocky slopes, rocks; 3000–3100 m. NW Yunnan (Zhongdian).

The original description of the apparently rare *Youngia yilingii* is based on a single collection from Zhongdian Xian of plants to 5 cm tall with entire to at most weakly pinnatifid, not more than 10 × 3 mm leaves. Another collection from the same county (*B. Alden et al., Kunming Edinburgh Gothenburg Exped. 579*, CAL 795201!) is considered also to belong to this remarkable species. It indicates that the leaf shape of the species shows some variation even in the same individual. In this collection only the early leaves of a rosette are similar to the ones described for *Y. yilingii*, while the later ones are larger and all pinnatipartite to pinnatisect as described above.

14. Youngia kangdingensis C. Shih, Acta Phytotax. Sin. 33: 186. 1995.

康定黄鹌菜 kang ding huang an cai

Herbs 7–20 cm tall, perennial. Taproot with shoot-bearing lateral roots. Stem solitary, slender, erect, sparsely branched from near base or middle. Basal leaves obovate, oblanceolate, or elliptic, 2–5.5 × 5–1.5 mm, pinnatipartite to pinnatisect, sparsely pubescent, base attenuate into a short petiole-like portion, margin sinuate-dentate; lateral lobes 1–4 pairs, broadly triangular, small; terminal lobes elliptic to obliquely triangular, margin entire, apex rounded, obtuse, or acute and mucronulate. Stem leaves absent or very few, similar to basal leaves but smaller or more strongly reduced. Synflorescence corymbiform, with usually 3–5 capitula. Capitula with ca. 15 florets; peduncle capillaceous, mostly 1–5 cm. Involucre narrowly cylindric, ca. (7–)8 mm. Phyllaries abaxially glabrous; outer phyllaries triangular to ovate, longest ca. 1 mm, apex obtuse; inner phyllaries 8, adaxially sparsely appressed hairy, midvein subapically mostly somewhat crested or corniculate, apex acute. Achene brown, fusiform, ca. 3.5 mm, apex strongly attenuate. Pappus white, 5–5.5 mm. Fl. and fr. Jul.

● Thickets; 1800–3300 m. W Sichuan (Kangding).

Youngia kangdingensis and the following five species appear to be more closely related to each other, and all are insufficiently known with respect to the extent of their variation, distribution, and actual delimitation.

15. Youngia hastiformis C. Shih, Acta Phytotax. Sin. 33: 185. 1995.

顶戟黄鹌菜 ding ji huang an cai

Herbs 10–30 cm tall, perennial. Taproot with lateral shoot-bearing roots. Stem solitary, slender, erect, branched from lower third or higher up, glabrous, sparsely leafy. Basal and lower stem leaves obovate to oblanceolate, 1–5.5 × 0.5–2 cm, glabrous, base attenuate into a petiole-like portion; first leaves undivided and sinuate-dentate; following leaves runcinately or lyrately pinnatipartite with small lateral lobes and a large obovate terminal lobe; later leaves pinnatisect with lateral lobes 1–4 pairs, opposite or alternate, ± triangular to lanceolate, and apex acute to acuminate, with terminal lobe narrowly triangular to triangular-hastate and small. Middle stem leaves (if any) similar to lower stem leaves; upper stem leaves linear-elliptic to linear, reduced in size. Synflorescence laxly corymbiform, with usually 5–12 capitula. Capitula with 9–14 florets; peduncle capillaceous, 0.5–5 cm, glabrous or sparsely white arachnoid hairy. Involucre narrowly cylindric, ca. 7 mm. Phyllaries abaxially glabrous; outer phyllaries ovate to lanceolate, longest 1–2 mm, apex acute; inner phyllaries 8, adaxially sparsely appressed hairy, midvein subapically plane (or somewhat crested or corniculate?), apex ± acute. Achene dark brown, fusiform, 2–2.5 mm, ribs finally spiculate, apex attenuate. Pappus white, ca. 5 mm. Fl. and fr. Apr–Jul.

● By streams, moist open areas; 2500–4000 m. Sichuan (Heishui, Xiangcheng).

The original description of the little-known *Youngia hastiformis*, based on a single collection from Heishui Xian, has been supplemented by two collections from Xiangcheng Xian made at somewhat higher elevations (*D. E. Boufford et al. 28388A* and *28925*), which are apparently also referable to this species. See also note under *Y. kangdingensis*.

16. Youngia prattii (Babcock) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 81. 1937.

川西黄鹌菜 chuan xi huang an cai

Crepis prattii Babcock, Univ. Calif. Publ. Bot. 14: 331. 1928.

Herbs 15–60 cm tall, perennial, ± rosulate. Caudex with residues of old leaf bases. Stem solitary, ± slender, erect, branched from middle, glabrous, distantly sparsely leafy. Rosette leaves and lower stem leaves oblanceolate to narrowly elliptic, 5–13 × 1–3 cm, lyrately or runcinately pinnatifid to pinnatisect, glabrous, base attenuate into a ± winged petiole-like portion, margin subentire to sinuate-dentate; lateral lobes 3–6 pairs, opposite to obliquely opposite, ovate, triangular, linear-lanceolate, or falcate, central ones largest and others gradually smaller, lowermost ones usually toothlike; terminal lobe broadly triangular, linear-lanceolate, or narrowly linear, apex obtuse, acute, or long acuminate. Middle and upper stem leaves similar to lower stem leaves or reduced in size and undivided. Synflorescence corymbiform, with few to many capitula. Capitula with 9–12 florets; peduncle usually 0.5–3 cm, very slender. Involucre narrowly cylindric, 7–9 mm, to 1.1 cm in fruit. Phyllaries abaxially glabrous; outer phyllaries ovate, longest 1–2 mm, apex obtuse; inner phyllaries ca. 8, adaxially pubescent with appressed hairs, midvein subapically plane, margin scarious, apex obtuse to acute. Anther tube dark green. Style branches ± yellow upon drying. Achene brown, subfusiform to columnar, 2.5–3 mm, ribs finely spiculate, apex attenuate. Pappus white, 4–5 mm. Fl. and fr. Jun–Sep.

● Thickets or grasslands on mountain slopes; 1500–2700 m. Henan, Hubei, ?Shanxi, Sichuan.

See note under *Youngia kangdingensis*.

17. Youngia wilsonii (Babcock) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 79. 1937.

栉齿黄鹌菜 zhi chi huang an cai

Crepis wilsonii Babcock, Univ. Calif. Publ. Bot. 14: 331. 1928.

Herbs 13–40 cm tall, perennial, ± rosulate. Caudex with residues of old leaf bases. Stems solitary or few, erect to curved-erect, branched from middle third or higher, glabrous. Rosette leaves and lower stem leaves oblanceolate, 5–10 × 1–2.5 cm, undivided or pinnatifid to pinnatipartite, margin sharply

sinuate-dentate; lateral lobes 4–6 pairs, opposite to obliquely opposite and usually with a pair of teeth between them, broadly to narrowly triangular, apex acute; terminal lobe linear to narrowly triangular, apex acute to acuminate. Middle and upper stem leaves linear, reduced in size. Synflorescence corymbiform, with several to many capitula. Capitula with 9–14 florets; peduncle usually 0.5–3 cm, very slender, arcuate. Involucre narrowly cylindric, 7–9 mm. Phyllaries abaxially glabrous; outer phyllaries ovate, longest 1–2 mm, apex acute to obtuse; inner phyllaries 8, margin white scarious, adaxially glabrous, midvein subapically plane, apex acute to obtuse. Anther tube greenish. Style branches yellow upon drying. Achene pale brown, subfusiform to columnar, 3–3.5 mm, ribs finely spiculate, apex attenuate. Pappus white, 4–5 mm. Fl. and fr. Jun–Sep.

● Grasslands; ca. 1500 m. Chongqing (Chengkou), Henan, Hubei.

See note under *Youngia kangdingensis*.

18. Youngia henryi (Diels) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 83. 1937.

长裂黄鹌菜 chang lie huang an cai

Crepis henryi Diels, Bot. Jahrb. Syst. 29: 633. 1901.

Herbs 15–80 cm tall, perennial, rosulate, with shoot-bearing roots. Caudex with residues of old leaf bases. Stem solitary, erect, branched from middle third or higher, glabrous, distantly leafy. Rosette leaves distinctly dimorphic, to 6(–10) × 2(–3) cm, glabrous, base with a sometimes brown lanate petiole-like portion. Early leaves broadly ovate, undivided and coarsely sinuate-dentate to pinnatifid, base contracted into a petiole-like portion; lateral lobes 1–6 pairs, triangular, apex acute; terminal lobe large, apex acute. Later leaves oblanceolate, elliptic, or lanceolate, pinnatipartite to pinnatisect, base attenuate into a petiole-like portion; lateral lobes 4–6 pairs, narrowly lanceolate to linear, margin basally often with large teeth, apex acute; terminal lobe narrowly lanceolate to linear, apex acute. Lower and middle stem leaves few, lanceolate, pinnatisect, similar to latest rosette leaves. Synflorescence laxly corymbiform, with few to many capitula. Capitula with 7–10 florets; peduncle capillaceous, usually 1–4 cm. Involucre narrowly cylindric, 7–9 mm. Phyllaries abaxially glabrous; outer phyllaries ovate, longest to 2.5 mm, apex obtuse; inner phyllaries 7 or 8, adaxially sparsely pubescent with appressed hairs, midvein subapically plane, margin white scarious, apex acute to obtuse. Anther tube green. Style branches yellow upon drying. Achene pale brown, subfusiform to columnar, 3–3.5 mm, ribs finely spiculate, apex attenuate. Pappus white, 4.5–5 mm. Fl. and fr. Jul–Aug.

● Grasslands on mountain slopes; 1500–2000 m. Hubei, Shaanxi, Sichuan.

See notes under *Youngia terminalis* and *Y. kangdingensis*.

19. Youngia terminalis Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 85. 1937.

大头黄鹌菜 da tou huang an cai

Herbs 20–50 cm tall, perennial, rosulate. Caudex with residues of old leaf bases. Stem very slender, erect, sparsely branched from middle third or higher, glabrous, almost leafless; branches arcuate. Rosette leaves obovate to oblanceolate, to 12 × 3 cm, undivided or lyrately pinnatifid, glabrous, base contracted or attenuate into a very long (to 9 cm) inconspicuously winged petiole-like portion, margin entire to coarsely sinuate-dentate; lateral lobes (if present) 1–4 pairs, triangular, small, apex obtuse; terminal lobe orbicular to ovate, base truncate to subsagittate, apex obtuse to acute. Stem leaves few, linear-lanceolate, reduced in size. Synflorescence laxly corymbiform, with few to several capitula. Capitula with 11–13 florets; peduncle slender to capillaceous, 1.5–12 cm. Involucre narrowly cylindric, 7–8 mm; outer phyllaries ovate, longest ca. 1.5 mm; inner phyllaries 8, adaxially finely appressed pubescent, midvein subapically somewhat crested or tuberculate, margin scarious, apex acute and white ciliate. Anther tube green. Style branches yellow upon drying. Achene dark brown, subfusiform to columnar, ca. 3 mm, ribs obscurely spiculate or muricate, apex attenuate. Pappus white, ca. 4 mm. Fl. and fr. Jul–Aug.

● Grasslands on mountain slopes; 1000–1800 m. W Sichuan (Kangding).

Youngia terminalis is only known from two late 19th century gatherings made by Soulié. The original material preserved at B was destroyed during WWII. No other material has been traced so far, and the above description is based on the original description and a photograph and drawings of the original material. It is apparently closely related to *Y. henryi* and perhaps only a form of the latter from shaded moist habitats. See also note under *Y. kangdingensis*.

20. Youngia heterophylla (Hemsley) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 87. 1937.

异叶黄鹌菜 yi ye huang an cai

Crepis heterophylla Hemsley, J. Linn. Soc., Bot. 23: 475. 1888; *C. bockiana* Diels.

Herbs 30–110 cm tall, annual to ?perennial. Stems solitary or few, erect, branched usually in apical third, glabrous or sparsely hairy. Basal and lower stem leaves oblanceolate, to 32 × 11 cm, lyrately pinnatipartite or sometimes undivided, both faces glabrous or ± pubescent with short hairs, base attenuate into a ± unwinged very variable in length (much longer when leaf undivided) petiole-like portion, margin sinuate-dentate; lateral lobes 1–8 pairs, opposite to obliquely opposite, elliptic to ovate, base truncate to attenuate and sometimes petiolulate, apex acute, obtuse, or rounded; terminal lobe elliptic, ovate, or lanceolate, much larger than lateral lobes, apex ± acute. Middle stem leaves similar to lower leaves but smaller and less (or more rarely not) divided, terminal lobe long acuminate; upper stem leaves narrowly elliptic, lanceolate, or linear-lanceolate, reduced in size. Synflorescence paniculiform-corymbiform, with many capitula. Capitula with 11–25 florets; peduncle capillaceous, usually 0.5–2 cm. Involucre cylindric, 6–7.5 mm. Phyllaries abaxially glabrous; outer phyllaries ovate, longest to 1(–2) mm, apex acute; inner phyllaries ca. 8, adaxially appressed pubescent, midvein subapically plane, margin narrowly white scarious, apex acute. Anther tube green. Style branches yellow upon drying. Achene dark brownish purple, fusiform, 2–3 mm, ribs apically finely spiculate, apex attenuate. Pappus white, 3–4 mm. Fl. and fr. Apr–Oct.

● Forests, forest margins, wastelands; 400–2300 m. Chongqing, Gansu, Guangdong, Guangxi, ?Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan.

"*Crepis? bockiana* Diels" (Bot. Jahrb. Syst. 29: 633. 1901) is based on the collection from Nanchuan, Chongqing, *Bock & von Rosthorn 1593*, which according to Babcock (Univ. Calif. Publ. Bot. 22: 916. 1947), who investigated a corresponding sheet from B, is a mixed gathering of a fragment with leaves and buds of *Youngia heterophylla* and a second completely sterile fragment with a single leaf of an unknown species. The sheet at B was apparently destroyed in 1943 and no other material of this collection is present at O, where the original set of the Bock and Rosthorn material is preserved. Therefore, the name is here treated as a synonym of *Y. heterophylla*. See also note under *Y. rosthornii*.

Youngia heterophylla may be confused with leafy-stemmed forms of *Y. japonica* subsp. *longiflora*. The latter, however, is strictly annual, its stem leaves have rather triangular or rhombic lateral lobes and an acute or shortly acuminate terminal lobe, and the pappus is of a single series of bristles only (vs. several bristles in a second series in *Y. heterophylla*).

21. Youngia rosthornii (Diels) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 92. 1937.

多裂黄鹌菜 duo lie huang an cai

Crepis rosthornii Diels, Bot. Jahrb. Syst. 29: 632. 1901; *C. japonica* (Linnaeus) Bentham f. *foliosa* Matsuda.

Herbs to 1 m tall or more, ?annual. Stem erect, branched above middle, glabrous, leafy. Basal leaves not seen. Lower and middle stem leaves broadly elliptic to ovate in outline, 11–20 × 7–14 cm, bipinnately compound, primary division pinnatisect; lateral lobes 3 or 4 pairs, opposite to obliquely opposite, oblanceolate, elliptic, irregularly elliptic, or lanceolate, to 5 cm, irregularly pinnatifid to pinnatisect, base ± winged petiolulate, apex acute to acuminate; primary terminal lobe similar in shape and size to lateral lobes; secondary lateral lobes few, irregularly ovate, triangular-ovate, or elliptic. Upper stem leaves similar to middle stem leaves but smaller and with narrower lobes or linear-lanceolate, reduced in size, and undivided. Synflorescence paniculiform-corymbiform, with many capitula. Capitula with ?20–25 florets; peduncle capillaceous, usually 0.5–3 cm. Involucre cylindric, ca. 6 mm. Phyllaries abaxially glabrous; outer phyllaries ovate, longest ca. 1 mm, apex ± acute; inner phyllaries ca. 8, adaxially ± appressed pubescent, midvein subapically plane, margin narrowly white scarious, apex acute. Anther tube green. Style branches yellow upon drying. Achene dark brownish purple, fusiform, ca. 2 mm, ribs apically finely spiculate, apex attenuate. Pappus white, 3–4 mm. Fl. and fr. Jun–Oct.

● Mountain slopes; 500–1500 m. Chongqing, Guangdong, Hubei, Sichuan, Zhejiang.

Distinction of *Youngia rosthornii* from *Y. heterophylla* is not without doubt because forms of the latter occur that approach the leaf division of the former. *Youngia rosthornii* may represent only an extreme form of *Y. heterophylla*.

22. Youngia longipes (Hemsley) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 92. 1937.

戟叶黄鹌菜 ji ye huang an cai

Crepis longipes Hemsley, J. Linn. Soc., Bot. 23: 476. 1888.

Herbs 80–100 cm tall, annual. Stem erect, branched from middle third or higher, glabrous, distantly leafy. Basal leaves with petiole to 15 cm; leaf blade cordate-hastate to sometimes ovate, to 15 × 5 cm, glabrous, margin sinuate-denticulate, apex acute, obtuse, or rounded. Stem leaves with gradually shorter petiole upwardly on stem, leaf blade smaller than in basal leaves and otherwise similar or lyrately pinnatisect; lateral lobes 1 or 2 pairs, alternate, narrowly ovate; terminal lobe broadly triangular, apex acuminate; uppermost leaves linear-lanceolate, reduced in size. Synflorescence paniculiform-corymbiform, with many capitula. Capitula with 15–20 florets. Involucre cylindric, 5–6 mm. Phyllaries abaxially glabrous; outer phyllaries ovate, longest less than ca. 1 mm, apex acute; inner phyllaries 8, adaxially appressed pubescent, midvein subapically plane, margin narrowly white scarious, apex acute. Achene pale red, finely mottled with yellow, fusiform, ca. 2 mm, ribs apically finely spiculate, apex strongly attenuate. Pappus white, ca. 4 mm. Fl. and fr. Jun.

● Sandy areas, valleys; 1000–1500 m. Hubei, Zhejiang.

23. Youngia bifurcata Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 89. 1937.

顶凹黄鹌菜 ding ao huang an cai

Herbs 12–13 cm tall, perennial, rosulate. Stems several, very slender, arcuate-erect or stoloniform, remotely 2-furcate, densely pubescent with pale brownish hairs especially at bifurcations, almost leafless. Rosette leaves and (if present) first basal leaf oblanceolate, to 10 × 2 cm, lyrately pinnatifid to lyrately pinnatipartite, pale ± brownish pubescent especially abaxially on midvein, base attenuate into a short narrowly winged petiole-like portion, margin faintly mucronulately sinuate-dentate or entire, apex obtuse; lateral lobes 3–5 pairs, semiorbicular to broadly triangular, ± retrorse, gradually diminishing in size toward leaf base, apex rounded and mucronulate; terminal segment ovate to elliptic. Synflorescence of 1–5 ± distant capitula. Capitula with ca. 12 florets; peduncle very slender. Involucre cylindric, 6–7 mm, glabrous. Outer phyllaries pale yellowish, ovate, longest ca. 2 mm, ± fleshy, apex acute to obtuse; inner phyllaries 8, adaxially pubescent with appressed hairs, midvein subapically crested, apex acute and white ciliate. Anther tube green. Style branches yellow upon drying. Achene dark reddish brown, fusiform, 3–3.5 mm, compressed, ribs spiculate apically, apex attenuate. Pappus white, 1.5–2.5 mm, ± deciduous. Fl and fr. Apr–May.

● Cultivated land; ca. 2500 m. Yunnan (Dongchuan).

Youngia bifurcata is only known from the type collection made by E. E. Maire sometime in the first third of the 20th century.

24. Youngia japonica (Linnaeus) Candolle, Prodr. 7: 194. 1838.

黄鹌菜 huang an cai

Herbs usually 10–150 cm tall, annual. Stems solitary or few, erect, branched from base, middle, or only apically, glabrous or basally often ± hairy, ± leafy or leafless. Basal leaves ± oblanceolate, to 15(–25) × 4(–6) cm, lyrately pinnatipartite or

pinnatisect, rarely not divided; glabrous or somewhat hairy, base attenuate into a longer or shorter narrowly winged to ± unwinged petiole-like portion, margin sinuate-dentate; lateral lobes few to many, ovate, rhombic, or elliptic, gradually smaller toward leaf base; terminal lobe ovate, ovate-lanceolate, or obovate, much larger than lateral ones, apex rounded to acute. Stem leaves similar to basal leaves, abruptly or gradually reduced to bracts upward on stem. Synflorescence corymbiform to paniculiform-corymbiform, usually with many to numerous capitula. Capitula with 10–20 florets; peduncle capillaceous. Involucre cylindric, 4–7 mm. Phyllaries abaxially glabrous; outer phyllaries ovate to triangular, longest less than 1.5 mm, apex acute; inner phyllaries adaxially appressed pubescent, midvein subapically plane, margin ± white scarious, apex acute. Anther tube dark green. Style branches yellow upon drying. Achene light brown to dark reddish or purplish brown, fusiform, 1.5–2.5 mm, ribs finely spiculate, apex strongly attenuate. Pappus white, 2.5–3.5 mm. Fl. and fr. Feb–Dec.

Mountain slopes, mountain valleys, ravines, forests, forest margins, grasslands, moist areas, by water, stream banks, trailsides, roadsides, disturbed places, densely grassy areas by houses or roads, field margins, as a weed in gardens and fields; below 100–4500 m. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [present in all easterly and southerly neighboring countries; originating probably from China and introduced pantropically, extending into adjacent subtropical regions].

Youngia lyrata (= *Y. pseudosenecio*) and *Y. longiflora* (= *Y. taiwaniana*) are treated here as *Y. japonica* subsp. *elstonii* and *Y. japonica* subsp. *longiflora*, respectively, of a wider *Y. japonica*, following Babcock and Stebbins (Publ. Carnegie Inst. Washington 484: 97–98. 1937). While *Y. japonica* subsp. *longiflora* seems a fairly well-characterized taxon, the delimitation between *Y. japonica* subsp. *japonica* and *Y. japonica* subsp. *elstonii* appears questionable in view of frequent transitions and a probably scattered distribution pattern.

1a. Involucre 6–7 mm; anther tube more than ca. 3 mm; achene 2–2.5 mm .... 24c. subsp. *longiflora*
1b. Involucre 4–5.5 mm; anther tube not more than ca. 2 mm; achene 1.5–2 mm.
  2a. Stem leaves none, 1, or 2 (rarely more) otherwise abruptly reduced to bracts; anther tube usually more than 1.5 mm ..... 24a. subsp. *japonica*
  2b. Stem leaves several, very gradually reduced upward on stem to bracts; anther tube at most ca. 1 mm ..... 24b. subsp. *elstonii*

24a. Youngia japonica subsp. **japonica**

黄鹌菜(原亚种) huang an cai (yuan ya zhong)

Prenanthes japonica Linnaeus, Mant. Pl. 1: 107. 1767; *Chondrilla japonica* (Linnaeus) Lamarck; *C. multiflora* (Thunberg) Poiret; *Crepis formosana* Hayata; *C. japonica* (Linnaeus) Bentham; *C. taquetii* (H. Léveillé & Vaniot) H. Léveillé; *Lactuca taquetii* H. Léveillé & Vaniot; *L. taraxacum* H. Léveillé & Vaniot; *Prenanthes fastigiata* Blume; *P. multiflora* Thunberg; *P. striata* Blume; *Youngia fastigiata* (Blume) Candolle; *Y. formosana* (Hayata) H. Hara; *Y. gracilis* Miquel; *Y. japonica* subsp. *formosana* (Hayata) Kitamura; *Y. japonica* var. *formosana* (Hayata) H. L. Li; *Y. multiflora* (Thunberg) Candolle; *Y. napifolia* Candolle; *Y. poosa* Candolle; *Y. runcinata* Candolle.

Herbs usually 10–90 cm tall. Stems solitary or few, leafless and with only bracts or with 1 or 2(or more) leaves in basal ca. 1/3(–1/2). Basal leaves mostly to 15 × 5 cm. Involucre 4–5 mm. Outer phyllaries less than 1 mm. Anther tube ?usually 1.7–2 mm. Achene 1.5–2 mm. Pappus 2.5–3.5 mm. Fl. and fr. Feb–Dec. 2*n* = 16*.

Mountain slopes, mountain valleys, forests, forest margins, grasslands, moist areas, stream banks, trailsides, roadsides, disturbed places, as a weed in gardens and fields; below 100–4500 m. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [present in all easterly and southerly neighboring countries; originating probably from China and introduced pantropically, extending into adjacent subtropical regions].

24b. Youngia japonica subsp. **elstonii** (Hochreutiner) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 98. 1937.

卵裂黄鹌菜 luan lie huang an cai

Crepis japonica var. *elstonii* Hochreutiner, Candollea 5: 340. 1934; *Chondrilla lyrata* (Thunberg) Poiret; *Crepis lyrata* (Thunberg) Bentham ex C. B. Clarke (1876), not (Linnaeus) Froelich (1838); *Ixeris lyrata* (Thunberg) Miquel; *Lactuca pseudosenecio* Vaniot; *Prenanthes lyrata* Thunberg; *Youngia lyrata* (Thunberg) Cassini; *Y. pseudosenecio* (Vaniot) C. Shih.

Herbs usually 0.5–1.5 m tall. Stem mostly solitary, mostly with well-developed leaves at least in lower half. Basal and lower stem leaves to 27 × 7 cm, pinnatipartite or sublyrately pinnatipartite; lateral lobes 3–7-paired, remote, elliptic to triangular, gradually smaller toward leaf base, lowermost segment usually toothlike, apex acute to obtuse; terminal lobe elliptic, apex acute. Middle and upper stems leaves similar to lower ones but gradually smaller and less divided upward on stem, gradually reduced to bracts. Capitula with ca. 20 florets. Involucre cylindric, 4–5.5 mm. Outer phyllaries less than 1 mm. Anther tube usually 0.6–1 mm. Achene 1.7–2 mm. Pappus 3–3.5 mm. Fl. and fr. Apr–Nov.

● Grasslands on mountain slopes, moist areas by water, densely grassy areas by houses, ravines; 300–2500 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan.

24c. Youngia japonica subsp. **longiflora** Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 97. 1937.

长花黄鹌菜 chang hua huang an cai

Crepis japonica subsp. *longiflora* (Babcock & Stebbins) Handel-Mazzetti; *Youngia longiflora* (Babcock & Stebbins) C. Shih; *Y. taiwaniana* S. S. Ying.

Herbs usually 30–90 cm tall. Stems solitary or few, leafless or leafy. Basal leaves to 23 × 7 cm, lyrately pinnatilobate, lyrately pinnatipartite, inconspicuously runcinate-pinnatilobate, or runcinate-pinnatipartite; lateral lobes 3–8 pairs, opposite to obliquely opposite, elliptic, triangular, or rhombic, gradually smaller toward leaf base, apex rounded, obtuse, or acute; termi-

nal lobe elliptic to ovate, apex rounded. Stem leaves absent or similar to basal leaves but gradually smaller and less divided upward on stem. Capitula with 15–20 florets. Involucre cylindric, 6–7 mm. Phyllaries in 4 rows, abaxially glabrous; outer phyllaries to 1.5 mm. Anther tube usually 3?–4 mm. Achene usually dark purple brown, 2–2.5 mm. Pappus ca. 3.5 mm. Fl. and fr. Mar–Aug.

● Mountain slopes, field margins, stream banks, densely grassy areas by roads; below 100–3100 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, ?Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang.

25. Youngia erythrocarpa (Vaniot) Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 102. 1937.

红果黄鹌菜 hong guo huang an cai

Lactuca erythrocarpa Vaniot, Bull. Acad. Int. Géogr. Bot. 12: 319. 1903.

Herbs 30–100 cm tall, annual. Stem solitary, slender, erect, branched from near base; branches closely and nearly regularly spaced, sparsely pubescent or glabrous. Basal leaves oblanceolate, to 8 × 3 cm, lyrately pinnatisect, glabrous or pubescent with multicellular hairs, base attenuate into a petiole-like portion, margin sinuate-dentate; lateral lobes (1 or)2 or 3 pairs, elliptic to narrowly elliptic, upper lobe largest, apex acute; terminal lobe broadly ovate to broadly triangular, much larger than lateral lobes, apex acute. Stem leaves similar to basal leaves but rather lanceolate, gradually smaller upward on stem and finally reduced and bractlike. Synflorescence paniculiform-corymbiform, with several to many capitula. Capitula with 10–15 florets; peduncle capillaceous. Involucre cylindric, 4–6 mm. Phyllaries abaxially glabrous; outer phyllaries triangular-ovate, longest ca. 1 mm, apex acute; inner phyllaries ca. 8, adaxially appressed pubescent, midvein subapically plane, margin narrowly white scarious, apex acute. Anther tube green. Style branches yellow upon drying. Achene red, broadly fusiform, 2–2.5 mm, compressed, lateral ribs especially in marginal achene conspicuously wide, ribs finely spiculate, apex attenuate into a stout 0.2–0.4 mm beak. Pappus white, 2.5–3 mm, caducous. Fl. and fr. Apr–Aug. 2*n* = 16*.

● Densely grassy areas on mountain slopes, wastelands on plains or in ravines; 400–1900 m. Anhui, Chongqing, Fujian, Gansu, Guizhou, Hubei, ?Hunan, Jiangsu, ?Jiangxi, Shaanxi, Sichuan, Zhejiang.

Distinction between *Youngia erythrocarpa* and the following species, *Y. rubida*, appears problematic, and their delimitation should be reassessed.

26. Youngia rubida Babcock & Stebbins, Publ. Carnegie Inst. Washington 484: 100. 1937.

川黔黄鹌菜 chuan qian huang an cai

Herbs 20–50 cm tall, annual. Stem erect, subdivaricately branched from near base, with multicellular hairs below but glabrescent or glabrous above. Basal leaves oblanceolate, 5–10 × 1.5–3.5 cm, lyrately pinnatipartite to pinnatisect, both faces glabrous or ± pubescent with multicellular hairs, base attenuate into a petiole-like portion, margin sinuate-dentate; lateral lobes 2 or 3 pairs, elliptic to narrowly elliptic; terminal lobe triangular, apex acuminate. Lower and middle stem leaves similar to basal leaves; upper stem leaves ± linear, reduced in size, undivided or acutely 2-lobed near base. Synflorescence paniculiform-corymbiform, with several to many capitula. Capitula with 13–15 florets; peduncle capillaceous. Involucre cylindric, 6–7 mm. Phyllaries abaxially glabrous; outer phyllaries ovate, less than 1 mm, apex acute; inner phyllaries ca. 8, adaxially appressed pubescent, midvein subapically plane, margin narrowly white scarious, apex ± acute. Anther tube green. Style branches yellow upon drying. Achene red, broadly fusiform, ca. 2 mm, subcompressed, ribs obscurely spiculate, apex attenuate into a stout 0.2–0.4 mm beak. Pappus white, 3–4 mm, ± caducous. Fl. and fr. Jun–Nov.

● Forests, forest margins, under rocks, earthen walls; ca. 600 m. Guizhou, Hunan, Sichuan.

See note under *Youngia erythrocarpa* above.

27. Youngia szechuanica (E. S. Söderberg) S. Y. Hu, Quart. J. Taiwan Mus. 22: 37. 1969.

少花黄鹌菜 shao hua huang an cai

Crepis szechuanica E. S. Söderberg, Svensk Bot. Tidskr. 28: 362. 1934, based on *C. scaposa* C. C. Chang, Sinensia 3: 201. 1933, not R. E. Fries (1928); *Hieracium runcinatifolium* C. C. Chang, nom. illeg. superfl.; *Youngia scaposa* Babcock & Stebbins, nom. illeg. superfl.

Herbs 15–40 cm tall, perennial, rosulate. Caudex brown lanate, with residues of old leaf bases. Stems solitary or few, slender, erect, branched from base or higher, leafless or only with bracts. Rosette leaves oblanceolate, to 20 × 7 cm, lyrately pinnatilobate, pinnatipartite, or pinnatisect, both faces pubescent with brown multicellular crinkled hairs, base attenuate into a petiole-like portion, margin mucronately sinuate-dentate; lateral lobes 5–8 pairs, opposite or alternate, semiorbicular, elliptic, or triangular, gradually smaller toward leaf base, apex obtuse to rounded; terminal lobe ovate, 5–10 cm, much larger than lateral lobes, shallowly lobed, apex rounded. Synflorescence paniculiform-corymbiform, with numerous capitula. Capitula with ca. 5 florets; peduncle very slender. Involucre cylindric, 6–7 mm. Phyllaries abaxially glabrous; outer phyllaries ovate to lanceolate, longest ca. 1.5 mm, apex ± acute; inner phyllaries 5, adaxially glabrous, apex obtuse. Anther tube and style branches yellow upon drying. Achene dark purplish brown, subfusiform to columnar, 2–3 mm, apex slightly attenuate. Pappus yellowish brown, 3–4 mm. Fl. and fr. Jun–Jul.

● Trailsides on mountain slopes; 900–1700 m. Sichuan.

Crepis szechuanica (1934), *Hieracium runcinatifolium* (1935), and *Youngia scaposa* (1937) are all replacement names for the illegitimate later homonym *C. scaposa* C. C. Chang. The earliest legitimate name for the species is *C. szechuanica*, and the correct name in *Youngia* must therefore be *Y. szechuanica*. The taxonomic placement of the species in *Youngia*, however, needs confirmation.

28. Youngia racemifera (J. D. Hooker) Babcock & Stebbins, Univ. Calif. Publ. Bot. 18: 229. 1943.

总序黄鹌菜 zong xu huang an cai

Crepis racemifera J. D. Hooker, Fl. Brit. India 3: 397. 1881; *C. rapunculoides* Dunn; *Faberia racemifera* (J. D. Hooker) Sennikov; *Hieracioides racemifera* (J. D. Hooker) Kuntze.

Herbs 20–70 cm tall, perennial, with a ?rhizome or ?shoot-bearing roots. Stem solitary, erect, unbranched or with simple branches from ca. middle third, glabrous, usually leafy. Basal and lower stem leaves ovate, triangular-ovate, or lanceolate, 5–15 × 1–5 cm, glabrous, base attenuate or contracted into a 3–9 cm, broadly and long or narrowly and short cuneately winged petiole-like portion, margin ± mucronulately sinuate-dentate, apex acute to acuminate. Middle and upper stem leaves narrowly ovate, lanceolate, or linear-lanceolate, gradually smaller upward on stem, base attenuate into a gradually shorter cuneately winged petiole-like portion, apex acuminate to long acuminate, otherwise similar to basal leaves. Synflorescence of stem and branches secundly racemiform (occasionally of stem narrowly paniculiform), with few to many drooping capitula. Capitula with 10–20 florets; peduncle wiry, usually 0.2–2 cm. Involucre narrowly campanulate, 1–1.3 cm. Phyllaries abaxially usually glabrous; outer phyllaries narrowly triangular to lanceolate, longest 1/4–1/3 as long as inner ones, apex obtuse to acute; inner phyllaries 8–10, midvein of single phyllaries subapically sometimes crested and/or corniculate, apex acute to obtuse and pale brownish ciliate. Anther tube yellow. Style strongly exserted, greenish black upon drying. Achene brown, ± cylindric, 4–5 mm, with 5 main ribs and 2 or 3 secondary ribs in between but otherwise ± smooth, apex truncate. Pappus yellowish to pale brown, 7–9 mm. Fl. and fr. Aug–Sep.

Grasslands on mountain slopes, forest margins, forests, forest openings, thickets; 2800–4200 m. Sichuan, Xizang, Yunnan [Bhutan, India (Sikkim), Nepal].

Doubts about the placement of this species in *Youngia* are justified, indeed. We do not agree, however, with its placement in *Faberia* as proposed by Sennikov and I. D. Illarionova (Komarovia 5: 109. 2008). Its systematic position is currently being investigated (J. W. Zhang et al., in prep.).

67. LAPSANASTRUM Pak & K. Bremer, Taxon 44: 19. 1995.

稻槎菜属 dao cha cai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, annual or short-lived perennial, rosulate. Leaves pinnatipartite or pinnatisect. Capitula usually nodding, in fruit with 6–20 florets. Involucre narrowly cylindric at anthesis, broader in fruit, less than 7 mm, glabrous. Outer phyllaries much shorter than inner ones; inner phyllaries linear-lanceolate to lanceolate, of equal length, becoming broader in fruit. Receptacle naked. Florets yellow. Achene narrowly ellipsoid, subcompressed, with 5 main ribs and each accompanied by 1(or 2) secondary ribs, apex truncate but with 0 or (1 or)2–4 main ribs apically prolonged into 0.2–2.2 mm slender hooked appendages. Pappus absent.

Four species: China, Japan, Korea; four species (two endemic) in China.

A morphological phylogenetic analysis by Pak and K. Bremer (Taxon 44: 13–21. 1995) revealed that the E Asian species of *Lapsana* Linnaeus are rather distant to the remainder of this genus and instead probably related to *Youngia*. Therefore, the four species have been transferred by these authors to a new genus, *Lapsanastrum*. The close relationship to *Youngia* and distance from *Lapsana* have been fully confirmed by a recent molecular phylogenetic analysis of subtribe Crepidinae (J. W. Zhang et al., in prep.).

1a. Inner phyllaries 8; achene without apical hooked projections.
  2a. Plants without creeping stems; flowering stems to 50 cm tall, with several capitula ..... 1. *L. humile*
  2b. Plants with creeping stems; flowering stems less than 10 cm tall, with 1 or 2 capitula ..... 2. *L. takasei*
1b. Inner phyllaries 5(or 6); achene usually with (1 or)2–4 apical hooked projections or rarely absent.
  3a. Achene with (1 or)2 slender hooked 0.2–1 mm projections ..... 3. *L. apogonoides*
  3b. Achene with 2–4 slender hooked 1.2–2.2 mm projections ..... 4. *L. uncinatum*

1. Lapsanastrum humile (Thunberg) Pak & K. Bremer, Taxon 44: 19. 1995.

矮小稻槎菜 ai xiao dao cha cai

Prenanthes humilis Thunberg in Murray, Syst. Veg., ed. 14, 715. 1784; *Lapsana humilis* (Thunberg) Makino; *L. musashiensis* Hayata; *L. parviflora* A. Gray; *Youngia humilis* (Thunberg) Candolle.

Herb 10–50 cm tall, annual to ?short-lived perennial, rosulate, with a taproot. Stems few to several, slender, decumbent to ascending, branched in upper part, puberulent or glabrescent, almost leafless. Rosette leaves oblanceolate, 3.5–10[–26] × 1–2[–4] cm, lyrately pinnatipartite to pinnatisect, base attenuate into petiole-like basal portion, margin sinuate-dentate; lateral lobes 2–7 pairs, elliptic to ovate; terminal lobe ovate, irregularly rhombic, or broadly triangular, much larger than lateral ones, apex ± rounded and mucronulate. Stem leaves 1 or 2, similar to rosette leaves. Synflorescence laxly corymbose, with several capitula. Capitula nodding in fruit, with 15–20 florets; peduncle capillaceous, 0.5–4 cm. Involucre cylindric and 3–4 mm at anthesis, ovoid to subhemispheric and 4–5 mm in fruit. Outer phyllaries 3 or 4, triangular-ovate, ca. 1 mm; inner phyllaries 8. Achene brown, 2–3 mm, minutely papillose, without hooked apical projections of main ribs. Fl. and fr. Apr–Jun. $2n = 16$.

Fields, wastelands, streamsides; 500–1000 m. Anhui, Fujian, Jiangsu, Zhejiang [Japan, Korea].

2. Lapsanastrum takasei (Sasaki) Pak & K. Bremer, Taxon 44: 20. 1995.

台湾稻槎菜 tai wan dao cha cai

Lactuca takasei Sasaki, Trans. Nat. Hist. Soc. Formosa 21: 224. 1931; *Lapsana takasei* (Sasaki) Kitamura.

Herbs to 10 cm tall, short-lived perennial, rosulate. Taproot with lateral shoot-bearing roots producing secondary leaf rosettes. Stems few, flagelliform, very slender, creeping to 50 cm above ground, sparsely pilose; nodes 5–10 cm apart, with adventitious roots and a single leaf. Flowering stems from rosettes and leaf axils of creeping stems, to 7 cm, very slender, ascending, simple or more rarely 2-parted, ± leafless. Rosette leaves oblanceolate, 4–9 × 1–2 cm, pinnatisect, rachis winged or not, pilose, base attenuate into a petiole-like portion, margin sinuate-dentate; lateral lobes 4–7 pairs, ovate, triangular, or rhombic, gradually smaller toward petiole-like base, apex rounded to acute and mucronulate; terminal lobe broadly ovate to suborbicular, much larger than lateral ones. Leaves of creeping stems similar to rosette leaves. Capitula 1 or 2 per flowering stem, with ca. 10 florets. Involucres cylindric, ca. 7 mm, in fruit ca. 4 mm wide. Outer phyllaries ca. 5, lanceolate, longest ca. 1 mm; inner phyllaries 8. Achene without hooked apical projections of main ribs. Fl. and fr. Jun–Aug. 2*n* = 16*.

● Moist mountain slopes; 1800–2800 m. Taiwan.

3. Lapsanastrum apogonoides (Maximowicz) Pak & K. Bremer, Taxon 44: 19. 1995.

稻槎菜 dao cha cai

Lapsana apogonoides Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 18: 288. 1873.

Herbs 5–25 cm tall, annual to biennial, rosulate, with a taproot. Stems several, slender, ascending, branched from basal half or higher up, pubescent or glabrous, distantly leafy. Rosette leaves oblanceolate, 3–15 × 1–2.5 cm, lyrately pinnatisect, base attenuate into a petiole-like portion, margin subentire to mucronulately sinuate-dentate; lateral lobes 2 or 3(or 4) pairs, ovate, elliptic, or hemispheric, apex mucronulate; terminal lobe ovate, rhombic, or elliptic, much larger than lateral ones, apex rounded and mucronulate. Stem leaves few, similar to basal leaves. Synflorescence laxly corymbiform to laxly paniculiform-corymbiform, with few to several capitula. Capitula nodding in fruit, with 6–10 florets; peduncle 1–5 cm. Involucre narrowly cylindric and 3–4 mm at anthesis, cylindric, campanulate, or obovoid and 4–6 mm in fruit. Phyllaries abaxially glabrous; outer phyllaries 3 or 4, ± ovate, longest 1–1.5 mm, apex acute and often purplish tipped; inner phyllaries 5(or 6). Achene straw-colored to yellowish brown, body 4–5 mm, minutely papillose, usually lateral main ribs apically prolonged into (1 or)2 slender hooked 0.2–1 mm appendages or rarely absent. Fl. and fr. Nov–Jun. 2*n* = 44.

Riverbanks, fields, wastelands, roadsides; low elevations. Anhui, Fujian, Guangdong, Guangxi, Hunan, Jiangsu, Jiangxi, Shaanxi, Taiwan, Yunnan, Zhejiang [Japan, Korea; introduced to W North America].

In Guangxi and Hunan, the species is used as green fodder for pigs.

4. Lapsanastrum uncinatum (Stebbins) Pak & K. Bremer, Taxon 44: 20. 1995.

具钩稻槎菜 ju gou dao cha cai

Lapsana uncinata Stebbins, Madroño 4: 154. 1938.

Herbs 5–10 cm tall, ?annual, rosulate, glabrous. Stems several, to 15 cm, slender, decumbent, branched in apical half, almost leafless. Rosette leaves oblanceolate, 4–10 × 1–1.5 cm, pinnatisect to lyrately pinnatisect, base attenuate into petiole-like portion, margin sinuate-dentate; lateral lobes 2–4 pairs, triangular to ovate; terminal lobe ovate, much larger than lateral ones, apex ± rounded and mucronulate. Stem leaves 0 or 1, similar to rosette leaves but reduced in size. Synflorescence laxly corymbose, with few to several capitula. Capitula nodding in fruit, with 10–12 florets; peduncle capillaceous, 1.5–5 cm. Involucre cylindric and 5–6 mm at anthesis, cylindric, campanulate, or obovoid and to 6.5 mm in fruit. Outer phyllaries 3 or 4, triangular-ovate, 1–1.5 mm; inner phyllaries 5(or 6). Achene straw-colored to reddish yellow, body ca. 3 mm, minutely papillose, 2–4 main ribs apically prolonged into slender hooked 1.2–2.2 mm appendages. Fl. and fr. Apr.

● Floodplains. S Anhui (Tongling).

Lapsanastrum uncinatum is a remarkable, apparently very rare species and is only known to the authors from the type collection made in 1924 in the floodplains of the Chang Jiang.

68. CREPIDIASTRUM Nakai, Bot. Mag. (Tokyo) 34: 147. 1920.

假还阳参属 jia huan yang shen shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Crepidifolium Sennikov; *Geblera* Kitagawa (1937), not Fischer & C. A. Meyer (1835); *Paraixeris* Nakai.

Herbs, annual, biennial, or perennial, sometimes subshrubs, often rosulate, with a taproot. Stems usually leafy. Leaves undivided or pinnately lobed; stem leaves often clasping. Capitula with 5–20 florets. Involucres narrowly cylindric. Phyllaries with narrow scarious margin; outer phyllaries few, longest ca. 1/4(–1/2) as long as inner ones; inner phyllaries 5 or 8, linear-lanceolate, equal in length. Receptacle naked. Florets yellow. Achene ± fusiform, slightly compressed, with 5 main ribs alternating with 1 or 2 secondary ribs, usually scabrid of antrorse acute papillae especially toward apex, rarely glabrous or muriculate, apex attenuate or with a beak less than 1/5 or to 1/2 of achene length. Pappus white, scabrid, usually ± caducous.

About 15 species: C and E Asia, including N Pacific Bonin (Ogasawara) Islands; nine species (two endemic) in China.

Crepidiastrum, in the circumscription used here, includes *Paraixeris*, following the conclusions by Pak and Kawano (Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 29–61. 1992) of their carpological and cytological investigations, which have been corroborated through recent molecular phylogenetic analyses by J. W. Zhang et al. (in prep.). The analyses by J. W. Zhang et al., moreover, revealed that the *Youngia* segregate *Crepidifolium*

is also nested within the *Crepidiastrum* clade, thus confirming an earlier assumption by Sennikov (Bot. Zhurn. 82(5): 113–116. 1997), which Sennikov later revised in favor of establishing the separate genus *Crepidifolium* (Sennikov & I. D. Illarionova, Komarovia 5: 96. 2008). This genus is therefore also treated here as a congener of *Crepidiastrum*, extending its geographical range to C Asia. Its basic chromosome number is $x = 5$.

1a. Inner phyllaries 5; florets 5 or 6 ..... 5. *C. chelidoniifolium*
1b. Inner phyllaries (7 or)8; florets 8–19.
2a. Stem leaves never clasping.
3a. Plant stoloniferous; leaf blade triangular to orbicular ..... 6. *C. humifusum*
3b. Plant not stoloniferous; leaf blade oblanceolate, elliptic, or lanceolate.
4a. Stems numerous, intricately and divaricately dichotomously branched ..... 9. *C. akagii*
4b. Stems 1 or few, paniculately branched.
5a. Involucre 0.8–1.1 cm, 2.5–3.5 mm wide at anthesis (in middle third); anther tube 3.5–5 mm; achene black to blackish ..... 7. *C. tenuifolium*
5b. Involucre 1–1.4 cm, (3.5–)4–6 mm wide at anthesis (in middle third); anther tube 5–6 mm; achene usually brownish ..... 8. *C. diversifolium*
2b. At least upper stem leaves conspicuously clasping.
6a. Annual or biennial herbs; achene with a beak 1/5–1/3 as long as achene.
7a. Middle and upper stem leaves broadest in basal third; involucre 4.5–6.5 mm; anther tube and style pure yellow upon drying ..... 1. *C. sonchifolium*
7b. Middle and upper stem leaves broadest in middle third; involucre 6–9 mm; anther tube and style greenish to blackish upon drying ..... 4. *C. denticulatum*
6b. Perennial rosulate herbs with a woody caudex or subshrubs; achene without a beak or with a beak at most 1/5 as long as achene.
8a. Leaves undivided or pinnately lobed, margin entire to shallowly dentate; primary stems decumbent; middle and upper stem leaves obovate, ovate, or lanceolate, apex subacute to rounded ..... 2. *C. lanceolatum*
8b. Leaves always undivided, margin entire to denticulate; primary stems ascending-erect; upper stem leaves broadly elliptic to broadly ovate, apex mostly rounded ..... 3. *C. taiwanianum*

1. Crepidiastrum sonchifolium (Maximowicz) Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 58. 1992.

尖裂假还阳参 jian lie jia huan yang shen

Herbs 20–100 cm tall, annual or biennial. Root vertical, with many fibrous rootlets. Stem solitary, erect, branched predominantly in upper half, glabrous or rarely puberulent (subsp. *pubescens*). Leaves glabrous, or rarely puberulent (subsp. *pubescens*). Basal leaves and often lower stem leaves oblanceolate, apex rounded. Middle and upper stem leaves sessile, narrowly ovate, lanceolate, or rarely ± elliptic, base very conspicuously auriculately clasping, auricles ± rounded; blade including auricles pinnatifid, pinnatipartite, or subpinnatisect and often laciniately so. Synflorescences terminating main stem and branches, corymbiform or paniculiform, with few to many capitula. Capitula with 12–20 florets; peduncle capillaceous. Involucre 4.5–6.5 mm, narrowly cylindric. Phyllaries abaxially glabrous; outer phyllaries few, ovate, less than 0.5 mm, apex acute; inner phyllaries ca. (7 or)8, plane or more often weakly to strongly crested or corniculate below apex. Achene fusiform, 2–4.2 mm including a slender 0.4–1.8 mm beak. Pappus white, 2–3 mm.

Grasslands on mountain slopes, thickets, floodplains, rocky stream beds, cliffs, roadsides; below 100–1900 m. Anhui, Chongqing, Gansu, ?Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan [Korea, Mongolia, E Russia].

1a. Stems, branches, and leaves glabrous; achene ribs scabrid especially apically, beak 0.4–1 mm and 1/5–1/3 as long as achene ..... 1a. subsp. *sonchifolium*
1b. Stems, branches, and leaves puberulent; achene ribs apically strongly muriculate, beak 1.2–1.8 mm and almost 1/2 as long as achene ..... 1b. subsp. *pubescens*

1a. Crepidiastrum sonchifolium subsp. **sonchifolium**

尖裂假还阳参(原亚种) jian lie jia huan yang shen (yuan ya zhong)

Youngia sonchifolia Maximowicz, Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 9: 180. 1859; *Crepidiastrum sonchifolium* var. *elegans* (Franchet) Sennikov; *Ixeridium elegans* (Franchet) C. Shih; *I. sonchifolium* (Maximowicz) C. Shih; *Ixeris denticulata* (Houttuyn) Stebbins subsp. *elegans* (Franchet) Stebbins; *I. denticulata* subsp. *sonchifolia* (Maximowicz) Stebbins; *I. serotina* (Maximowicz) Kitagawa; *I. sonchifolia* (Maximowicz) Hance; *I. sonchifolia* var. *serotina* (Maximowicz) Kitagawa; *Lactuca bungeana* Nakai; *L. denticulata* (Houttuyn) Maximowicz var. *sonchifolia* (Maximowicz) Maximowicz; *L. elegans* Franchet; *L. sonchifolia* (Maximowicz) Debeaux (1876), not Willdenow (1803); *Paraixeris serotina* (Maximowicz) Tzvelev; *P. sonchifolia* (Maximowicz) Tzvelev; *P. sonchifolia* var. *serotina* (Maximowicz) Kitagawa; *Y. serotina* Maximowicz.

Basal leaves and often lower stem leaves oblanceolate, apex rounded. Middle stem leaves sessile, narrowly ovate, lanceolate, or rarely ± elliptic, 2.5–9 × 0.5–3 cm, base very conspicuously auriculately clasping, auricles ± rounded; blade including auricles pinnatifid, pinnatipartite, or subpinnatisect, with short triangular (1–5 mm) to long narrowly triangular or sublinear (to 1.5 cm) acute lateral lobes and a larger acute ter-

minal lobe, margin entire or sharply dentate. Upper stem leaves similar to middle stem leaves but smaller, usually less incised, less dentate, or entire especially in upper part of blade, apex long acuminate. Involucre 4.5–6.5 mm. Inner phyllaries plane or more often weakly to strongly crested or corniculate below apex. Anther tube and style yellow upon drying. Achene reddish brown, 2–3.2 mm including a slender 0.4–1 mm beak. Pappus 2–3 mm. Fl. and fr. Apr–Sep. 2*n* = 10*.

Grasslands on mountain slopes, thickets, floodplains, rocky stream beds, cliffs, roadsides; below 100–1900 m. Anhui, Chongqing, Gansu, ?Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan [Korea, Mongolia, E Russia].

Stebbins (J. Bot. 75: 43–51. 1937) distinguished *Ixeris denticulata* subsp. *elegans* from *I. denticulata* subsp. *sonchifolia* by the slightly smaller involucres, distinctly crested or corniculate inner phyllaries, and more finely dentate leaves. In the material studied, this delimitation does not appear to work. Although, for example, the inner phyllaries are strikingly corniculate in the type of *Lactuca elegans*, there is no discontinuity but a rather continuous variation toward plants with only slightly crested or even plane phyllaries. Similar observations regard the other features listed.

1b. Crepidiastrum sonchifolium subsp. **pubescens** (Stebbins) N. Kilian, **comb. nov.**

柔毛假还阳参 rou mao jia huan yang shen

Basionym: *Ixeris denticulata* subsp. *pubescens* Stebbins, J. Bot. 75: 49. 1937.

Stems, branches, and leaves puberulent. Stem leaves lanceolate, 3–6 cm, pinnatipartite; lateral lobes 5–10 pairs, margin entire or dentate to weakly pinnatifid. Involucre 4.5–5.5 mm. Inner phyllaries not or weakly crested or corniculate below apex. Anther tube and style yellow upon drying. Achene 3.5–4.2 mm including a slender 1.2–1.8 mm beak, body apically muriculate. Pappus 2–2.5 mm.

● Hubei.

A little-known taxon, tentatively placed here, it is apparently only known from the holotype at W.

2. Crepidiastrum lanceolatum (Houttuyn) Nakai, Bot. Mag. (Tokyo) 34: 150. 1920.

假还阳参 jia huan yang shen

Prenanthes lanceolata Houttuyn, Nat. Hist. 10: 383. 1779; *Chondrilla lanceolata* (Houttuyn) Poiret; *Crepidiastrum koshunense* (Hayata) Nakai; *C. lanceolatum* f. *batakanense* (Kitamura) Kitamura; *C. lanceolatum* var. *batakanense* (Kitamura) Nemoto; *C. lanceolatum* f. *pinnatilobum* (Maximowicz) Nakai; *C. quercus* (H. Léveillé & Vaniot) Nakai; *Crepis integra* (Thunberg) Miquel; *C. integra* var. *pinnatiloba* Maximowicz; *C. lanceolata* (Houttuyn) Schultz Bipontinus; *C. lanceolata* var. *pinnatiloba* (Maximowicz) Makino; *Hieracioides integra* (Thunberg) Kuntze; *Ixeris koshunensis* (Hayata) Stebbins; *I. lanceolata* (Houttuyn) Stebbins (1937), not C. C. Chang (1932); *I. quercus* (H. Léveillé & Vaniot) Stebbins; *Lactuca koshunensis* Hayata; *L. lanceolata* (Houttuyn) Makino; *L. lanceolata* var. *batakanensis* Kitamura; *L. quercus* H. Léveillé & Vaniot; *P. integra* Thunberg.

Herbs 10–20 cm tall, perennial, rosulate, with a woody caudex or rootstock. Stems several from rosette leaf axils, to 40 cm, decumbent, leafy, each usually producing a secondary leaf rosette at a node in its middle third and with a single or few ± ascending-erect remotely leafy secondary flowering stems. Rosette leaves spatulate to rarely elliptic, 5–15 × 0.5–4.5 cm, usually somewhat fleshy, undivided or more rarely pinnatifid to pinnatisect with ovate to lanceolate lateral lobes, glabrous, base cuneately attenuate, margin entire or shallowly dentate, apex usually rounded. Lower and middle stem leaves similar to rosette leaves but smaller, base semiamplexicaul, apex obtuse to acute. Upper stem leaves obovate to ovate, base auriculately clasping, apex subacute to obtuse. Synflorescence corymbiform, with few to several capitula. Capitula with 8–12 florets; peduncle slender. Involucre narrowly cylindric, 7–9 mm. Phyllaries glabrous; outer phyllaries few, ovate, longest ca. 2 mm, apex ± acute; inner phyllaries 8, apex subacute. Achene brownish, subfusiform, 3–4 mm, scabrid, apically attenuate or with a less than 0.5 mm beak. Pappus white, 3–4 mm. 2*n* = 10*.

Rocky situations on hillsides in coastal areas. Taiwan [Japan, S Korea].

3. Crepidiastrum taiwanianum Nakai, Bot. Mag. (Tokyo) 34: 252. 1920.

台湾假还阳参 tai wan jia huan yang shen

Crepidiastrum koshunense (Hayata) Nakai var. *taiwanianum* (Nakai) Yamamoto; *Ixeris taiwaniana* (Nakai) Stebbins; *Lactuca taiwaniana* (Nakai) Makino & Nemoto.

Herbs 20–40 cm tall, perennial, sometimes subshrubs, rosulate, with a woody caudex. Stems several from rosette leaf axils, ascending to erect, branched in apical third or half, leafy; older stems basally woody, developing in middle third a secondary leaf rosette with a single or few ± ascending-erect leafy secondary flowering stems. Rosette leaves spatulate, 4–12 × 1–4 cm, glabrous, base attenuate, margin entire or denticulate, apex rounded. Lower stem leaves similar to rosette leaves but smaller, base semiamplexicaul. Middle and upper stem leaves broadly elliptic to broadly ovate, smaller than lower ones, base auriculately clasping, margin entire or faintly denticulate, apex mostly rounded. Synflorescence corymbiform, with several to many capitula. Capitula with 8–12 florets; peduncle slender. Involucre narrowly cylindric, 6–8 mm. Phyllaries glabrous; outer phyllaries few, ovate, longest ca. 1.5 mm, apex ± acute; inner phyllaries 8, apex subacute. Achene brownish, subfusiform, ca. 4 mm, scabrid, apically attenuate or with a less than 0.5 mm beak. Pappus white, ca. 3 mm. 2*n* = 10*.

● Littoral areas; near sea level to 200 m. S Taiwan.

Crepidiastrum taiwanianum is closely related to *C. lanceolatum*. Closer investigation should show whether its status as a separate species is actually justified.

4. Crepidiastrum denticulatum (Houttuyn) Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 56. 1992.

黄瓜假还阳参 huang gua jia huan yang shen

Herbs 30–120 cm tall, annual or biennial. Root vertical, with many fibrous rootlets. Stem solitary, erect, branched pre-

dominantly in upper half, glabrous. Leaves glabrous. Basal and lower stem leaves mostly withered in fruit, ± petiolate or sessile, usually oblanceolate, undivided or pinnately divided. Middle stem leaves sessile, base conspicuously auriculately clasping, auricles usually rounded; blade (including auricles) oblanceolate, obovate, pandurate, or ± elliptic, undivided, or pinnatifid or pinnatipartite, margin entire or dentate, apex rounded, acute, or acuminate. Upper stem leaves similar to middle stem leaves but smaller, usually less incised, less dentate, or entire. Synflorescences terminating main stem and branches, corymbiform or paniculiform, with few to many capitula. Capitula with 12–20 florets; peduncle capillaceous. Involucre narrowly cylindric, 6–9 mm. Phyllaries abaxially glabrous; outer phyllaries few, ovate, less than 0.5 mm, apex acute; inner phyllaries ca. (7 or)8, midvein subapically plane, crested, or corniculate. Anther tube and style greenish to blackish upon drying. Achene blackish dark brown, narrowly ellipsoid, 2.5–4.5 mm, with 10–15 apically scabrid ribs, apex attenuate into a beak 1/5–1/3 as long as achene. Pappus white, 3–5.5 mm.

Forests, forest margins, grasslands, dry slopes, among boulders, cliffs, field margins, roadsides; below 100–2000 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Mongolia, E Russia, Vietnam].

Based on the treatment by Stebbins (J. Bot. 75: 43–51. 1937) under *Ixeris*, excluding the misplaced *I. denticulata* subsp. *elegans*, *I. denticulata* subsp. *pubescens*, and *I. denticulata* subsp. *sonchifolia* (see subspecies of *Crepidiastrum sonchifolium* above), three subspecies are recognized in *C. denticulatum*. They are not always easily distinguishable and seem linked by transitional populations, but this approach may provide a fairly suitable basis for further, much needed studies.

1a. Involucre 6–7(–8) mm; midvein of inner phyllaries crested below apex; achene with 0.4–1 mm beak ca. 1/4–1/3 as long as achene ..... 4c. subsp. *ramosissimum*
1b. Involucre 7–9 mm; midvein of inner phyllaries plane or crested below apex; achene with 0.2–0.6 mm beak ca. 1/5 as long as achene.
2a. Involucre 7–8 mm; midvein of inner phyllaries plane below apex; achene including beak 2.5–3.5 mm; pappus 3.5–4.5 mm ..... 4a. subsp. *denticulatum*
2b. Involucre 8–9 mm; midvein of inner phyllaries crested below apex; achene including beak 3–4 mm; pappus 4.5–5.5 mm ..... 4b. subsp. *longiflorum*

4a. Crepidiastrum denticulatum subsp. **denticulatum**

黄瓜假还阳参(原亚种) huang gua jia huan yang shen (yuan ya zhong)

Prenanthes denticulata Houttuyn, Nat. Hist. 10: 385. 1779; *Chondrilla denticulata* (Houttuyn) Poiret; *C. hastata* (Thunberg) Poiret; *Crepidiastrum denticulatum* var. *cornutum* Sennikov; *C. denticulatum* f. *pinnatipartitum* (Makino) Sennikov; *Ixeris denticulata* (Houttuyn) Stebbins; *I. denticulata* f. *pinnatipartita* (Makino) Stebbins; *Lactuca denticulata* (Houttuyn) Maximowicz; *L. denticulata* [unranked] *pinnatipartita* Makino; *Paraixeris denticulata* (Houttuyn) Nakai; *P. denticulata* f. *pinnatipartita* (Makino) Nakai; *P. denticulata* var. *pinnatipartita* (Makino) Barkalov; *P. pinnatipartita* (Makino) Tzvelev; *Prenanthes hastata* Thunberg; *Youngia chrysantha* Maximowicz; *Y. denticulata* (Houttuyn) Kitamura; *Y. denticulata* f. *pinnatipartita* (Makino) Kitamura; *Y. hastata* (Thunberg) Candolle.

Basal leaves and lower stem leaves oblanceolate, apex usually rounded. Middle stem leaves sessile, base very conspicuously auriculately clasping, auricles ± rounded; blade (including auricles) oblanceolate, obovate, pandurate, or more rarely ± elliptic, 3–12 × 1–7 cm, undivided, or pinnatifid or pinnatipartite, margin shallowly or more deeply dentate or entire; lateral lobes (if present) 2–4 pairs, opposite to subalternate, triangular-ovate, elliptic, or obovate; terminal lobe triangular-ovate to elliptic, much larger, apex rounded to subacute. Upper stem leaves similar to middle stem leaves but smaller, usually less incised or less dentate or entire. Involucre 7–8 mm. Inner phyllaries usually plane below apex. Achene 2.5–3.5 mm including a 0.2–0.5 mm beak. Pappus 3.5–4.5 mm. Fl. and fr. Aug–Feb. 2*n* = 10*.

Forests, forest margins, grasslands, cliffs, field margins; below 100–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Shanxi, Zhejiang [Japan, Korea, Mongolia, E Russia, Vietnam].

4b. Crepidiastrum denticulatum subsp. **longiflorum** (Stebbins) N. Kilian, **comb. nov.**

长叶假还阳参 chang ye jia huan yang shen

Basionym: *Ixeris denticulata* subsp. *longiflora* Stebbins, J. Bot. 75: 48. 1937.

Leaves similar to subsp. *denticulatum*. Involucre 8–9 mm. Inner phyllaries usually distinctly crested below apex. Achene 3–4 mm including a 0.3–0.6 mm beak. Pappus 4.5–5.5 mm. Fl. and fr. (?Sep–)Jan–Mar.

● Field margins; 400–1000 m. Fujian, Guangdong, Jiangxi.

4c. Crepidiastrum denticulatum subsp. **ramosissimum** (Bentham) N. Kilian, **comb. nov.**

枝状假还阳参 zhi zhuang jia huan yang shen

Basionym: *Brachyramphus ramosissimus* Bentham, London J. Bot. 1: 489. 1842; *Ixeris denticulata* subsp. *ramosissima* (Bentham) Stebbins; *I. ramosissima* (Bentham) A. Gray.

Basal and lower stem leaves spatulate to obovate, to 24 × 7 cm, undivided or pinnatipartite to pinnatisect (often lyrately so), base cuneately attenuate into a winged or sometimes unwinged petiole-like portion and semiamplexicaul to somewhat auriculately clasping, margin sinuate-dentate, apex rounded to acute; lateral lobes (if present) 2–5 pairs. Middle and upper stem leaves mostly spatulate but uppermost ones sometimes lanceolate, smaller, undivided or pinnatipartite, base without petiole-like portion but distinctly auriculately clasping, margin subentire to shallowly sinuate-dentate, apex rounded to

acute. Involucre 6–7(–8) mm. Inner phyllaries usually distinctly crested below apex. Achene 2.8–4.5 mm including a beak 1/4–1/3 as long as achene. Pappus ca. 3 mm. Fl. and fr. Jul–Nov. 2*n* = 10*.

● Dry slopes, among boulders, cliffs, roadsides; 600–2000 m. Guangdong, Guangxi, Guizhou, Yunnan.

5. Crepidiastrum chelidoniifolium (Makino) Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 56. 1992.

少花假还阳参 shao hua jia huan yang shen

Lactuca chelidoniifolia Makino, Bot. Mag. (Tokyo) 12: 47. 1898 [*"chelidonifolia"*]; *Ixeris chelidoniifolia* (Makino) Stebbins; *L. senecio* H. Léveillé & Vaniot; *Paraixeris chelidonifolia* (Makino) Nakai; *Youngia chelidoniifolia* (Makino) Kitamura.

Herbs 10–25[–50] cm tall, annual, glabrous. Stem solitary, erect, branched from base. Basal leaves withered at anthesis. Lower and middle stem leaves with a slender petiole often basally with well-developed dentate or dissected auricles; leaf blade ± elliptic, 2–6[–12] × 0.5–3[–6] cm, irregularly and interruptedly pinnatisect, rachis wingless; lateral lobes 1–4 pairs, opposite to alternate, ovate, elliptic, falcate, rhombic, or oblanceolate, margin sparsely dentate to incised; terminal lobe similar to lateral ones. Upper stem leaves similar to lower and middle stem leaves. Synflorescence of main stem and branches corymbiform or paniculiform, with few to many capitula. Capitula with ca. 5(or 6) florets. Involucre narrowly cylindric, 5–7 mm. Outer phyllaries few, ovate, longest 0.6–1 mm, apex obtuse to acute; inner phyllaries 5, apex acute to obtuse. Anther tube and style greenish to blackish upon drying. Achene brownish, fusiform, 2.5–3.5 mm, with 10–15 apically long papillose ribs, apex attenuate or with a beak to 0.7 mm. Pappus white, 3.5–4.5 mm. Fl. and fr. Sep–Oct. 2*n* = 10.

Mountain slopes, ravines, forests, moist cliffs; 1000–1700 m. Heilongjiang, Jilin [Japan, Korea, E Russia].

"Ixeris saxatilis" (Baranov, Zap. Kharbin. Obshch. Estestvoisp. Etnogr. 12: 34. 1954, and repeated identically in Feddes Repert. Spec. Nov. Regni Veg. 63: 289. 1961), based on a collection from Heilongjiang, is here considered as conspecific with *Crepidiastrum chelidoniifolium*, following Sennikov (Bot. Zhurn. 82(5): 114. 1997). Sennikov also noted (loc. cit.) that the name *"I. saxatilis"* was not validly published because the alternative name *"Lactuca saxatilis"* was proposed simultaneously (*Vienna Code*, Art. 34.2). Three later binomials referring to, and based on, Baranov's original description, where two gatherings were cited, were also not validly published, because their authors failed to indicate a single gathering as the type (Art. 37.1 and 37.2): *"Ixeris saxatilis"* (Soják, Novit. Bot. Delect. Seminum Horti Bot. Univ. Carol. Prag. 1962: 50. 1962), *"Paraixeris saxatilis"* (Tzvelev, Fl. URSS 29: 400. 1964), and *"Crepidiastrum saxatile"* (Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 57. 1992).

6. Crepidiastrum humifusum (Dunn) Sennikov, Bot. Zhurn. 82(5): 115. 1997.

心叶假还阳参 xin ye jia huan yang shen

Lactuca humifusa Dunn, J. Linn. Soc., Bot. 35: 512. 1903; *Crepis stolonifera* H. Léveillé; *Ixeris humifusa* (Dunn) Stebbins; *I. stebbinsiana* Handel-Mazzetti; *Paraixeris humifusa* (Dunn) C. Shih.

Herbs 15–40 cm tall, perennial, with long creeping runners sometimes covering ground. Basal leaves present at anthesis, with an unwinged sparsely hairy petiole to 13 cm; leaf blade obovoid, elliptic, broadly ovoid, or semiorbicular, 5–8 × 4–9 cm, abaxially sparsely hairy, lyrately pinnatisect or pinnatipartite, with 1 or 2(or more?) pairs of lateral lobes and a much larger terminal lobe or margin coarsely sinuate-dentate, base cordate to truncate, apex acute. Middle and upper stem leaves and leaves on runners with unwinged petiole usually as long as blade or longer; leaf blade broadly ovate, subtriangular, or semiorbicular, margin coarsely sinuate-dentate, otherwise similar to basal leaves. Uppermost stem leaves petiolate; leaf blade lanceolate to polygonal, not divided, base truncate to broadly cuneate. Synflorescence laxly corymbiform with 2–7 capitula. Capitula with 10–14 florets; peduncle capillaceous, 1–5 cm. Involucre cylindric, 8.5–11 mm. Phyllaries abaxially glabrous; outer phyllaries few, ovate to narrowly ovate, longest 1.5–2 mm, apex acute to obtuse; inner phyllaries 8, apex obtuse. Anther tube and style dark. Achene brown, ellipsoid, ca. 3.5 mm, subcompressed, with ca. 10 ribs, apex attenuate into a thick ca. 0.5 mm beak. Pappus white, ca. 4 mm. Fl. and fr. Aug–Sep.

● Cliffs in shaded and damp valleys; 900–2500 m. E Chongqing (Wushan), W Hubei (Badong, Shennongjia), ?Sichuan, NE Yunnan.

Crepidiastrum humifusum is apparently rare, of scattered distribution, and still little known. Its placement in *Crepidiastrum* should be regarded as tentative and needs confirmation by more detailed investigations.

7. Crepidiastrum tenuifolium (Willdenow) Sennikov, Bot. Zhurn. 82(5): 115. 1997.

细叶假还阳参 xi ye jia huan yang shen

Crepis tenuifolia Willdenow, Sp. Pl. 3: 1606. 1803; *Barkhausia tenuifolia* (Willdenow) Candolle; *Berinia tenuifolia* (Willdenow) Schultz Bipontinus; *Chondrilla baicalensis* (Ledebour) Schultz Bipontinus; *Crepis altaica* (Babcock & Stebbins) Roldugin; *C. baicalensis* Ledebour; *C. pulcherrima* Fischer ex Link; *Geblera tenuifolia* (Willdenow) Kitagawa; *Hieracioides tenuifolia* (Willdenow) Kuntze; *Lagoseris tenuifolia* (Willdenow) Reichenbach; *Youngia altaica* (Babcock & Stebbins) Czerepanov; *Y. tenuifolia* (Willdenow) Babcock & Stebbins; *Y. tenuifolia* subsp. *altaica* Babcock & Stebbins.

Herbs 10–70 cm tall, perennial, rosulate. Taproot strong, woody. Caudex woody, branching with age, with residues of old leaf bases. Stems solitary or few, erect, usually branching in upper half, leafy; branches ascending-erect. Rosette leaves numerous; petiole 3–9 cm, adaxially long brown tomentose, base ± expanded; leaf blade narrowly elliptic, 7–17 × 2–5 cm, pinnatisect to pinnatipartite; lateral lobes 6–12 pairs, opposite to alternate, very variable, narrowly elliptic, lanceolate, or linear, undivided or sparsely divided with linear segments, apex acute; terminal lobe similar to lateral ones. Stem leaves similar to rosette leaves but gradually smaller and less or not divided upward on stem. Synflorescence corymbiform or paniculiform-corymbiform, with some capitula. Capitula with 10–15 florets. Involucre narrowly cylindric, 8–11 mm. Phyllaries dark green,

abaxially sparsely curled pilose or rarely glabrous, frequently crested or corniculate below apex, apex acute; outer phyllaries few, narrowly ovate, longest 1/3–1/2 as long as inner ones, apex acute; inner phyllaries 8. Achene black to blackish, fusiform, 4–6 mm, with 10–12 ribs, shortly and rather inconspicuously scabrid, apex attenuate to weakly beaked. Pappus white, 4–6 mm. Fl. and fr. Jul–Sep. 2*n* = 10.

Mountain slopes, meadows, floodplains, by water, gravelly areas; 1500–4000 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Xinjiang, Xizang [Mongolia, E Russia].

The related species, previously treated as *Youngia serawschanica* (B. Fedtschenko) Babcock & Stebbins (incl. *Y. distincta* (Popov & Vvedensky) Babcock & Stebbins), distributed in Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan, and distinguished by a pale brownish pappus and inner phyllaries often with long pale bristles on the midvein, was also included for Xinjiang by C. H. An (Fl. Xinjiang. 5: 451. 1999), but this record is presumably erroneous (Sennikov & I. D. Illarionova, Komarovia 5: 96. 2008, under *Crepidifolium*).

8. Crepidiastrum diversifolium (Ledebour ex Sprengel) J. W. Zhang & N. Kilian, **comb. nov.**

细裂假还阳参 xi lie jia huan yang shen

Basionym: *Prenanthes diversifolia* Ledebour ex Sprengel, Syst. Veg. 3: 657. 1826; *Crepis tenuifolia* Willdenow var. *altaica* Bongard & C. A. Meyer; *Youngia diversifolia* (Ledebour ex Sprengel) Ledebour; *Y. tenuifolia* (Willdenow) Babcock & Stebbins subsp. *diversifolia* (Ledebour ex Sprengel) Babcock & Stebbins.

Herbs 18–40 cm tall, perennial, rosulate. Taproot strong, woody. Caudex woody, branching with age, with residues of old leaf bases. Stems solitary or few, erect, branching from base or middle, leafy. Rosette leaves petiolate; petiole 2–6 cm, long brown tomentose, base expanded; leaf blade narrowly elliptic, 6–9 × 2–4 cm, pinnatipartite to pinnatisect; lateral lobes 6–9 pairs, lanceolate to linear, margin entire or with few teeth; terminal lobe similar to lateral ones. Stem leaves similar to rosette leaves but gradually smaller and less or not divided upward on stem. Synflorescence corymbiform or paniculiform-corymbiform, with some capitula. Capitula with 10–16 florets. Involucre broadly cylindric, 1–1.4 cm. Phyllaries abaxially dark green, sparsely curled pilose, frequently crested or corniculate below apex; outer phyllaries few, ovate-lanceolate, longest 1/4–1/3 as long as inner ones, apex acute; inner phyllaries 8. Achene brown to blackish, fusiform, 5–7.5 mm, with 10–14 ribs, shortly scabrid, apex attenuate to weakly beaked. Pappus white, 6–7 mm. Fl. and fr. Jul–Sep. 2*n* = 15, 20.

Mountain slopes, rock slopes, gravelly areas on floodplains; 1800–4700 m. Gansu, Xinjiang, Xizang [N India, Kashmir, Kazakhstan, Mongolia, Nepal, E Russia].

Crepidiastrum diversifolium is a triploid or tetraploid taxon closely related to and perhaps not sharply delimited from *C. tenuifolium*, being distinguished mainly by larger involucres and florets. It was considered conspecific by Sennikov and I. D. Illarionova (Komarovia 5: 93. 2008, under *Crepidifolium*); closer investigations are necessary.

9. Crepidiastrum akagii (Kitagawa) J. W. Zhang & N. Kilian, **comb. nov.**

叉枝假还阳参 cha zhi jia huan yang shen

Basionym: *Geblera akagii* Kitagawa, J. Jap. Bot. 13: 430. 1937; *Crepidifolium akagii* (Kitagawa) Sennikov; *C. tenuicaule* (Babcock & Stebbins) Tzvelev; *Crepis tenuifolia* Willdenow subsp. *tenuicaulis* (Babcock & Stebbins) Handel-Mazzetti; *Youngia akagii* (Kitagawa) Kitagawa; ?*Y. nansiensis* Y. Z. Zhao & L. Ma; *Y. ordosica* Y. Z. Zhao & L. Ma; *Y. tenuicaulis* (Babcock & Stebbins) Czerepanov; *Y. tenuifolia* (Willdenow) Babcock & Stebbins subsp. *tenuicaulis* Babcock & Stebbins.

Shrublets 10–25 cm tall, cushion-forming, rosulate. Taproot woody. Caudex woody, branching with age, densely covered with residues of old leaf bases. Stems many, slender, rigid, hardened, erect, repeatedly, dichotomously, intricately, and divaricately branched almost from base, glabrous. Rosette leaves oblanceolate to narrowly elliptic, 2–8 × 0.5–3 cm, glabrous, pinnatifid to pinnatisect, basally attenuate; lateral lobes 5 or 6 pairs, broadly triangular toothlike to narrowly linear, unequal in length, margin entire, apex acute. Stem leaves few, much smaller, otherwise similar to basal leaves or linear to linear-subulate, reduced in size, undivided, and often bractlike. Synflorescence of each stem divaricately corymbiform, with some capitula. Capitula with 10–12 florets. Involucre narrowly cylindric, 8–9 mm. Phyllaries dark green, abaxially glabrous to slightly puberulent, frequently crested or corniculate below apex; outer phyllaries few, narrowly ovate to lanceolate, longest ca. 2 mm, apex acute; inner phyllaries 8, apex ± obtuse. Achene black to blackish, fusiform, 3.5–5.5 mm, with 10 ribs, shortly scabrid, apex attenuate. Pappus white, 4–6 mm, caducous. Fl. and fr. Jul–Sep. 2*n* = 42.

Grasslands on mountain slopes, gravelly areas; 1400–4900 m. Gansu, Hebei, Nei Mongol, Xinjiang [Mongolia, E Russia].

Crepidiastrum akagii is superficially similar to and sometimes confused with *Askellia flexuosa*; for their distinction see there (p. 327). *Crepidiastrum akagii* is closely related to *C. tenuifolium* and *C. diversifolium* and, as was already assumed by Babcock and Stebbins (Publ. Carnegie Inst. Washington 484: 52. 1937), a “polyploid apomict.” No material has been seen of *Youngia nansiensis*, which was provided by its authors with a very poor description and said to be glabrous but otherwise similar to *C. akagii* (Y. Z. Zhao & L. Ma, Bull. Bot. Res., Harbin 24: 133. 2004); it is provisionally sunk in the synonymy of the latter. The largely neglected *Y. alashanica* H. C. Fu (in Ma, Fl. Intramongol., ed. 2, 4: 849. 1993), said to have affinities to *C. akagii* as well, in contrast, is certainly completely unrelated and actually represents with high probability *Launaea procumbens* (see there, p. 239).

69. HETERACIA Fischer & C. A. Meyer, Index Sem. Hort. Petrop. 1: 29. 1835.

异喙菊属 yi hui ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, annual. Stem leaves sagittately clasping. Capitula solitary or few, terminal on or in axils of branches, with numerous florets. Involucre hemispheric in fruit. Phyllaries in 2 rows; outer phyllaries 2–5; inner phyllaries lanceolate. Receptacle naked. Flo-

rets yellow. Achene dimorphic; outer achenes with short stout beak; inner achenes with a long slender beak. Pappus absent in outer achenes and mostly present in inner achenes, white, of scabrid bristles.

One species: C and SW Asia, SE Europe.

1. Heteracia szovitsii Fischer & C. A. Meyer, Index Sem. Hort. Petrop. 1: 30. 1835.

异喙菊 yi hui ju

Heteracia epapposa (Regel & Schmalhausen) Popov; *H. szovitsii* var. *epapposa* Regel & Schmalhausen.

Herbs 5–30(–40) cm tall, annual. Taproot slender. Stem erect to ascending, sparsely furcately branched from base, glabrous. Basal leaves narrowly elliptic, obovate, or narrowly spatulate, 3–8 × 0.5–1.5 cm, undivided or shallowly pinnatifid to pinnatisect, glabrous, base attenuate, margin entire or sinuate-dentate, apex rounded to acute; lateral lobes (if present) triangular to narrowly elliptic, unequal. Stem leaves narrowly ovate to lanceolate, 3–7 × 0.5–1.5 cm, base sagittately clasping, otherwise similar to basal leaves. Capitula solitary or few, terminal or in axils of branches, sessile or on a distally somewhat thickened peduncle to usually ca. 4 cm at fruiting, with 20–50 florets. Involucre stout cylindric and 4–6 × 4–5 mm at anthesis, flat hemispheric and 5–10 mm in diam. in fruit. Outer phyllaries 2–5, triangular, 1–2 mm, subequal; inner phyllaries lanceolate, ca. 8, subequal. Achene with body 3–4 mm, of 2 kinds; outer achenes grayish brown, broadly obconical, compressed, with 5 ± rugose ribs, lateral ribs strongly winglike and enlarged, with a stout to slender 0.8–1.8 mm beak; inner achenes slenderly obconical, with 5 unequal, apically acute verruciform or scaly ribs, with a filiform beak to 8–10 mm strongly exceeding involucre. Pappus absent in outer achenes, mostly present or more rarely absent in inner achenes, white, 3–5 mm. Fl. and fr. Apr–Jun. $2n = 8$.

Deserts or semideserts; 800–1000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia (E European part), Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

70. GARHADIOLUS Jaubert & Spach, Ill. Pl. Orient. 3: 119. 1850.

小疮菊属 xiao chuang ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, annual. Leaves mostly rosulate, undivided to pinnatisect. Capitula few to many, cymose on stout branches. Involucre campanulate. Phyllaries in 2 rows; outer phyllaries inconspicuous; inner phyllaries linear-lanceolate, hardened, thickened in fruit. Receptacle naked. Florets yellow. Achene columnar, ± incurved, minutely hairy; outer achenes apically attenuate and partly enclosed by inner hardened phyllaries; inner achenes attenuate into a long slender beak. Pappus white, of scabrid bristles to 1.5 mm.

Four species: C and SW Asia; one species in China.

1. Garhadiolus papposus Boissier & Buhse, Nouv. Mém. Soc. Imp. Naturalistes Moscou 12: 135. 1860.

小疮菊 xiao chuang ju

Rhagadiolus papposus (Boissier & Buhse) Kuntze.

Herbs 5–20(–40) cm tall, annual. Taproot slender. Stem erect, branched from base or basally, white pubescent and sometimes also with subulate stiff bristles. Basal leaves oblanceolate, narrowly elliptic-oblanceolate, or elliptic, 2–15 × 0.5–3 cm, lyrately pinnatifid to pinnatisect, base attenuate, margin ± dentate; lateral lobes 2–5-paired, lowermost ones small and toothlike, upper ones large and triangular to elliptic; terminal lobe triangular to elliptic, apex obtuse, acute, or rounded. Stem leaves few, similar to basal leaves or narrowly elliptic and divided or not. Capitula usually a few densely aggregated at nodes of branches, with 6–10 florets. Involucre stoutly cylindric and 4–5 × 3–4 mm at anthesis, 6–9 mm in fruit. Outer phyllaries few, inconspicuous; inner phyllaries linear-lanceolate, abaxially with rigid subulate bristles or rarely glabrous, hardened, carinate and incurved in fruit, partly enclosing outer achenes. Achene columnar, curved, with appressed hairs; outer achenes 4–5 mm, apically attenuate; inner achenes 7–10 mm, strongly exceeding involucre, apically attenuate into a long slender beak. Pappus of white, smooth to scabrid bristles of 0.2–1.5 mm, shorter in outer achenes, longer in inner achenes. Fl. and fr. Apr–Jun.

Plains, low mountain regions; above 600 m. Xinjiang [Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

71. TARAXACUM F. H. Wiggers, Prim. Fl. Holsat. 56. 1780, nom. cons., not Zinn (1757).

蒲公英属 pu gong ying shu

Ge Xuejun (葛学军); Jan Kirschner, Jan Štěpánek

Herbs, rosulate, perennial, with a taproot, root head sometimes with a tunic (covered with dry brown remnants of petioles from previous years). Stems 1 to sometimes several, hollow, leafless (scape), unbranched, rarely with 1–3 branches. Plant indumentum consisting of arachnoid hairs; leaf and scape hairs sometimes on low protuberances or ridges; hairs on floret tube often straight and simple. Leaves entire or variously lobed, runcinate to pinnatisect. Capitulum pointing upward or downward after anthesis. Involucre with two distinct series of phyllaries. Some of phyllaries often corniculate or horned at apex; outer phyllaries variable in length and

shape (imbricate) or almost uniform (not imbricate), usually substantially shorter than inner ones, appressed to reflexed, glabrous to ciliate or with arachnoid surfaces, unbordered to variously pale to whitish bordered. Receptacle naked, glabrous or sparsely arachnoid. Florets yellow, white, whitish yellow, pale or deep pink, orange, brownish orange, or reddish brown; ligules flat, involute, or tubular, adaxial epidermal cell cuticle ± domed and transversely striate. Achene whitish, straw-brown, ochraceous, reddish, reddish brown, deep brown, or ± black, usually composed of a body, which includes a narrowed but equally colored cone, and apically with a beak but cone sometimes indistinct or not developed; body spinulose and/or squamulose in upper part (below cone), often tuberculate below or completely or almost smooth, or spinulose and tuberculate throughout, abruptly or gradually narrowing into cone (when cone developed); beak usually longer than achene body including cone or short, sometimes not developed at all, thin or thick. Pappus with numerous scabrid bristles, white, yellowish, or light reddish brown. Plants with agamospermous reproduction or sexual, self-incompatible or rarely self-compatible. Chromosome base number $x = 8$ (diploids to dodecaploids). Diploids always sexual, tetraploids usually agamospermous [three tetraploid sexual species known in *Taraxacum* sect. *Piesis*], other polyploids agamospermous.

More than 2,500 species: mainly in the Arctic and temperate zones of the N Hemisphere with main diversity in mountains of Eurasia, a few species in temperate regions of the S Hemisphere; 116 species (81 endemic, three introduced) in China.

The genus *Taraxacum* represents a taxonomic complexity in the whole of its range and in China in particular. Basic features of dandelions relevant for the taxonomy at the species level are: 1) There is a low level of structural morphological differentiation. 2) There is a coexistence of agamospermy and sexuality. 3) There is complex hybridity. 4) There is extensive polyploidy. 5) There is a large number of taxa. Thus, any taxonomic study of this genus should follow a few principles: 1) A great attention should be paid to the reproduction in population structures because different modes of reproduction usually mean very different variation ranges, and species in *Taraxacum* differ substantially in this respect. 2) The taxonomic study must be started at the lowest level of recognizable units in order to avoid a loss of information, and later lumping should be a result of a knowledge of the population structure of all subordinate units. 3) The category of section is equally important as that of species in *Taraxacum*. Because of very different reproduction systems, the species have incommensurable variation ranges, and, for a non-specialist in particular, the most useful traditional rank covering both sexual and agamospermous taxa is that of section. Moreover, in an imperfectly explored region, there might be sections in which the species remain unknown or undescribed because of the insufficient material, although the very occurrence of the given section in the territory studied is unquestionable. The latter case requires using sections as one of the basic categories in taxonomic hierarchy.

Notes on descriptions: Achenes are measured to include the cone, a narrow part of the achene connecting achene body with the beak. Middle leaves are those well developed during full anthesis; outer leaves are the first spring leaves and are usually less deeply lobed or not divided. Inner leaves develop at the end of anthesis and are usually more deeply divided than the others. In the descriptions, middle leaves are taxonomically the most important. Outer phyllaries are described as imbricate when the outermost ones of them are broader and shorter than the successive more inner ones (often the outermost ones are ovate to ovate-lanceolate and the others lanceolate to narrowly lanceolate; the distal parts of the latter are clearly visible above the outermost ones). In species with imbricate outer phyllaries, the bracket measurements usually refer to the innermost outer phyllaries (the longest and the narrowest ones).

In several Chinese *Taraxacum* sections achene color substantially changes before maturity. Particularly in *T.* sect. *Tibetana* and *T.* sect. *Emodensia*, two color series can be recognized: in one series achenes are pale reddish ochraceous or ochraceous when immature and become darker red to reach deep reddish castaneous brown or deep red when mature, and the other series starts with pale grayish or straw-colored achenes, becoming gray and reaching almost black at full maturity.

Variation is also observed in the development of a horn on the outer phyllaries. The first capitula to blossom often have flat or callose outer and/or inner phyllaries while later capitula have a distinct horn near the apex of the phyllaries. This characteristic mainly concerns *Taraxacum* sect. *Borealia*, *T.* sect. *Emodensia*, and *T.* sect. *Mongolica*.

The references to Higher Pl. China in the following treatment of *Taraxacum* refers to the treatment of *Taraxacum* by X. J. Ge (11: 766–786. 2005).

1a. Achene smooth or with very sparse spinules or tubercles above, spinules minute.
2a. Achene cone subcylindric and clearly developed ..... 15. *T.* sect. *Glabra* (p. 316)
2b. Achene cone not developed at all or broadly conic and forming a gradual transition from achene body to beak.
3a. Outer phyllaries sparsely to densely arachnoid on abaxial and/or adaxial surfaces; outer phyllary margin densely to sparsely arachnoid; achene usually 5–6.5 mm; beak not fragile, usually almost as thick as achene body; pappus easily breaking off ..... 4. *T.* sect. *Oligantha* (p. 280)
3b. Outer phyllaries glabrous on both surfaces; outer phyllary margin glabrous or subglabrous; achene usually 4–5 mm; beak fragile, thick or slightly thickened but narrower than achene body; pappus not easily breaking off ..... 13. *T.* sect. *Atrata* (p. 314)
1b. Achene sparsely to densely spinulose and/or squamulose above, spinules evident and not minute.
4a. Most of outer phyllaries patent, arcuate-patent, recurved, or reflexed.
5a. Achene red, reddish brown, or deep brown.
6a. Achene longer than 4.2 mm; plants medium-sized to subrobust; tunic not evident ..... 19. *T.* sect. *Erythrocarpa* (p. 321)
6b. Achene 3.2–4.2 mm; plants small; tunic evident ..... 22. *T.* sect. *Erythrosperma* (p. 323)
5b. Achene light grayish straw-colored brown, light olivaceous brown, yellowish, or pale ochraceous.

7a. Near apex of outer phyllaries flat, callose, or minutely corniculate (check later flowering capitula).
8a. Outer phyllaries 3–5 mm wide and leaves subprostrate to erect-patent and not subleathery ... 10. *T.* sect. *Qaisera* (p. 303)
8b. Outer phyllaries usually 1.5–3 mm wide, or if broader then leaves erect and subleathery.
9a. Leaves erect, subleathery; achene (4–)5–6.1 mm; cone subcylindric, 1–2.2 mm ..... 9. *T.* sect. *Turrita* (p. 301)
9b. Leaves erect-patent to subprostrate, not subleathery; achene 3–4.5 mm; cone conic to subcylindric, 0.2–0.9 mm ..... 23. *T.* sect. *Taraxacum* (p. 324)
7b. Near apex of outer phyllaries (check later flowering capitula) or sometimes only inner phyllaries with a conspicuous horn.
10a. Ligules yellowish orange, later light brownish orange; outer phyllaries 25–40 ..... 1. *T.* sect. *Biennia* (p. 273)
10b. Ligules deep yellow; outer phyllaries to 25.
11a. Outer phyllaries 15–25, 6–13 mm; leaves subleathery; achene 4–6.1 mm ..... 9. *T.* sect. *Turrita* (p. 301)
11b. Outer phyllaries less than 15, to 6 mm; leaves not subleathery; achene 3–4 mm .... 12. *T.* sect. *Macrocornuta* (p. 313)

4b. Outer phyllaries appressed, loosely appressed, or erect, a minority of them may be erect-patent.
12a. Outer phyllaries or sometimes only inner ones or both with conspicuous horns.
13a. Achene body 1.1–2 mm wide when mature.
14a. Outer phyllaries not distinctly veined; achene spinulose and/or tuberculate in upper 1/4–1/2 but otherwise ± smooth ..... 7. *T.* sect. *Emodensia* (p. 291)
14b. Outer phyllaries with distinct venation; achene usually squamulose or spinulose and tuberculate throughout ..... 8. *T.* sect. *Mongolica* (p. 296)
13b. Achene body 0.7–1.1 mm wide when mature.
15a. Achene cone broadly conic to subconic; achene body abruptly to subabruptly narrowing into cone; scapes usually growing from lateral side to leaf rosette ..... 16. *T.* sect. *Borealia* (p. 317)
15b. Achene cone cylindric to subcylindric; achene body gradually to subgradually narrowing into cone; scapes growing from center of leaf rosette.
16a. Outer phyllaries 13–24; leaves deeply dissected or pinnatisect, lateral lobes linear, linear-triangular, or rarely to narrowly triangular ..... 3. *T.* sect. *Stenoloba* (p. 278)
16b. Outer phyllaries 8–14; leaves shallowly pinnatilobed to pinnatifid, lateral lobes broadly triangular, deltoid, or broadly deltoid-triangular ..... 11. *T.* sect. *Ceratoidea* (p. 312)
12b. Outer phyllaries flat, callose, or minutely corniculate.
17a. Outer phyllaries 3.5–8 mm wide.
18a. Outer phyllaries 6–17 mm.
19a. Outer phyllaries corniculate near apex; achene cone usually 0.8–1.4 mm; scapes densely arachnoid ..... 5. *T.* sect. *Calanthodia* (p. 281)
19b. Outer phyllaries flat near apex; achene cone usually 0.4–0.8 mm; scapes sparsely arachnoid to subglabrous or densely arachnoid ..... 10. *T.* sect. *Qaisera* (p. 303)
18b. Outer phyllaries 3–6 mm.
20a. Achene cone conic, 0.5–0.6 mm; achene body ± gradually narrowing into cone ..... 14. *T.* sect. *Arctica* (p. 316)
20b. Achene cone ± cylindric, 0.6–0.8 mm; achene body subabruptly narrowing into cone .... 21. *T.* sect. *Dissecta* (p. 323)
17b. Outer phyllaries 1–3.5 mm wide.
21a. Outer phyllaries light glaucous-green to light green, dark color confined to a narrow middle strip, flat near apex ..... 17. *T.* sect. *Parvula* (p. 318)
21b. Outer phyllaries blackish, blackish green, dark green, or deep green, if light green then corniculate.
22a. Achene light grayish straw-colored brown or light grayish brown.
23a. Achene cone ± conic or subcylindric, 0.4–0.5 mm wide; beak thickened or thin.
24a. Achene body spinules (particularly upper ones) coarse, usually curved upward ..... 2. *T.* sect. *Leucantha* (p. 273)
24b. Achene body spinules long or short and thinly or shortly subconic, straight, erect-patent to suberect ..... 6. *T.* sect. *Tibetana* (p. 285)
23b. Achene cone ± cylindric, 0.2–0.3 mm wide; beak thin.
25a. Pappus white to yellowish white; flowering spring to early summer; dry subsaline or steppe to substeppe habitats ..... 3. *T.* sect. *Stenoloba* (p. 278)
25b. Pappus light pinkish brown; flowering late summer and autumn; wet saline habitats .... 18. *T.* sect. *Piesis* (p. 320)
22b. Achene reddish, red, dark olivaceous brown, deep brown to blackish brown, or blackish.
26a. Achene cone cylindric, thin; achene 3.2–3.8 mm ..... 21. *T.* sect. *Dissecta* (p. 323)
26b. Achene cone conic or subconic, if ± cylindric then thick; achene 3.7–5.5 mm.
27a. Achene beak longer than body usually by 1.5 mm or more ..... 6. *T.* sect. *Tibetana* (p. 285)

27b. Achene beak shorter than or equaling body.
28a. Achene blackish brown; stigmas blackish; leaf lateral lobes few ..... 14. *T.* sect. *Arctica* (p. 316)
28b. Achene reddish brown; stigmas pale grayish green; leaf lateral lobes numerous ..... 20. *T.* sect. *Suavia* (p. 322)

1. Taraxacum sect. **Biennia** R. Doll, Feddes Repert. 93: 543. 1982.

垂头蒲公英组 chui tou pu gong ying zu

Hairs on scapes and on some leaves often on low protuberances. Capitulum nodding after anthesis. Outer phyllaries very numerous, linear-lanceolate, irregularly recurved, apical part attenuate, apex with a horn; inner phyllaries ± equaling outer ones. Florets brownish orange. Stigmas dark blackish violet when dry. Achene pale brown, medium-sized; body ± broad, apically subgradually narrowing into a 0.5–0.8 mm subconic cone; beak 1–1.5 cm. Pappus dirty white to brownish white. Sexual.

● One species: China.

The section was described on the basis of the report of a biennial life cycle in cultivated material. The bienniality of *Taraxacum nutans* is excluded on the basis of the study of plants collected in the wild. They often have a root head with a tunic (see the generic description). Field observations show almost complete absence of sterile leaf rosettes in natural populations (almost all plants flowering), another feature supporting the most common *Taraxacum* pattern.

1. Taraxacum nutans Dahlstedt, Svensk Bot. Tidskr. 26: 264. 1932.

垂头蒲公英 chui tou pu gong ying

Herbs to 45 cm tall, robust, perennial but often mistakenly reported to be biennial. Leaves basally indistinctly narrowed into a winged green or purplish petiole; leaf blade pale grayish green, oblanceolate to narrowly oblanceolate, 20–30 × 3–5 cm, arachnoid to densely arachnoid, margin usually dentate or rarely with patent acute lobules. Scapes pale brownish green, sparsely arachnoid near base but very densely arachnoid below capitulum, hairs pale brownish. Capitulum 5–6 cm wide. Involucre to 1.3 cm wide, base ± rounded. Outer phyllaries to 40, linear-lanceolate, 1.5–1.8 × 0.2–0.3 cm, irregularly recurved, apically attenuate, middle part paler green, venation prominent, border purplish or membranous, margin dentate and apically ciliate, apex with a large acute horn; inner phyllaries 1.5–1.7 cm, narrow. Ligules yellowish orange, later light brownish orange; outer ligules flat, striped purplish; inner ligules involute. Stigmas deep brownish grayish green, dark blackish violet when dry. Anthers polliniferous; pollen grains regular in size. Achene pale brown, 3.5–5 × 1–1.5 mm; body apically densely spinulose-squamulose and subabruptly narrowing into a 0.5–0.8 mm subconic cone; beak 1.2–1.5 cm. Pappus 6–7 mm. Fl. late summer. Sexual. 2*n* = 16*

● Mountain grassland slopes and forests, along paths; 1100–3200 m. W Hebei, S Ningxia, Shaanxi, Shanxi.

2. Taraxacum sect. **Leucantha** Soest, Wentia 10: 6. 1963.

白花蒲公英组 bai hua pu gong ying zu

Leaves and scapes sparsely arachnoid to subglabrous. Capitulum erect after anthesis. Outer phyllaries (9 or)10–16(–19), greenish to dark green, imbricate or sometimes not so, ovate to lanceolate, usually tightly appressed, border paler or reddish and usually broad or less often narrow or absent, usually not corniculate near apex. Florets white, whitish yellow, pale yellowish (more deeply yellow in center of capitulum), or yellow. Achene pale grayish or brownish straw-colored, subdensely coarsely spinulose with subacute stout spinules often slightly curved upward, apically subgradually to subabruptly narrowing into a usually subcylindric 0.7–1 × 0.4–0.5 mm cone; beak 5–7 mm, sometimes thick but usually thin. Pappus white or brownish discolored, 5–7 mm.

About 23 species: Afghanistan, China, India, Mongolia, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan; 13 species (four endemic) in China.

Part of the sectional diversity center is in SW China.

In Hebei, Nei Mongol, Shaanxi, and Shanxi sexual representatives of *Taraxacum* sect. *Leucantha* were detected. They are very variable in leaf shape and by their outer phyllary characters belong to the group of *T. sinicum* and *T. dealbatum*. Further research is needed.

Taraxacum leucanthum (Ledebour) Ledebour (Fl. Ross. 2: 815. 1846) has been reported as a member of the Chinese flora (FRPS 80(2): 14. 1999; Higher Pl. China 11: 769. 2005). The name usually covers most of the diversity of the whole section in the literature. We failed to find any specimen belonging to this species in the material studied. However, *T. leucanthum* might be found in NW Xinjiang. High mountain plants from Gansu, Qinghai, and Xizang reported in the literature under this name belong to other taxa (in part, probably to *T. candidatum*), but a revision is inevitable.

1a. Pollen absent.
2a. Outer phyllaries evenly black to blackish green, border not developed ..... 2. *T. albiflos*
2b. Outer phyllaries green to dark green in middle, paler borders developed.
3a. Scapes glabrous; achene cone 1–1.1 mm, beak 5–6 mm ..... 4. *T. niveum*
3b. Scapes arachnoid; achene cone 0.7–1 mm, beak 4–5 mm ..... 6. *T. candidatum*
1b. Pollen present.

4a. Pollen grains regular in size (plants sexual) ..... see comment above
4b. Pollen grains irregular in size.
5a. Stigmas yellow or ± yellow.
6a. Achene beak 2–3 mm, thick ..... 8. *T. armeriifolium*
6b. Achene beak 4–5 mm, thin.
7a. Achene 3.5–3.9 mm; pappus 4–5 mm ..... 11. *T. pseudoleucanthum*
7b. Achene 5.2–5.7 mm; pappus ca. 7 mm ..... 12. *T. iliense*
5b. Stigmas discolored (grayish, greenish, dark, yellowish green).
8a. Inner florets involute to subtubular, cream to pale yellowish white ..... 14. *T. cereum*
8b. Inner florets canaliculate, all yellow or at least only outer ones white.
9a. All florets yellow.
10a. Involucre base rounded, 7–10 mm wide; outer phyllaries ovate to broadly ovate ..... 9. *T. ikonnikovii*
10b. Involucre base ± subobconic, 6–8 mm wide; outer phyllaries ovate-lanceolate to lanceolate.
11a. Leaf lateral lobes linear to linear-triangular, not lingulate; achene 3.5–4.4 mm, cone 0.7–1 mm ..... 7. *T. sinicum*
11b. Leaf lateral lobes lingulate; achene 4.5–4.8 mm, cone 1.2–1.5 mm ..... 13. *T. patiens*
9b. At least outer florets ± white inside.
12a. Outer phyllaries with dark blackish green middle part, border white and 0.9–1.3 mm wide ..... 3. *T. album*
12b. Outer phyllaries with green to dark green middle part, border whitish and 0.5–1 mm wide.
13a. Pappus ± yellowish white ..... 5. *T. dealbatum*
13b. Pappus conspicuously brownish pinkish white ..... 10. *T. luridum*

2. Taraxacum albiflos Kirschner & Štěpánek, **sp. nov.**

白花蒲公英 bai hua pu gong ying

Type: China. Xinjiang: “Turkestania sinensis: in montibus K’un-lun [昆仑山], Keng-shewar, in paludosis ad Aktjok,” 27 Jun 1932, *N. Ambolt, S. Hedin Expedition 5849b* (holotype, S; isotype, S).

Plantae agamospermae foliis linearibus integris vel denticulatis, scapis superne dense araneosis, phyllariis involucralibus exterioribus 11 ad 14, adpressis, aterrimis, ovatis vel ovato-lanceolatis, parte mediana obscure nigrescenti-viridi, marginibus pallidis non evolutis, ligulis exterioribus albis, extus stria atro-rosea notatis, interioribus pallide lutescentibus, antheris polline carentibus, stigmatibus extus nigricantibus.

Herbs to 10 cm tall, slender, perennial. Leaves mid-green but pale green at base, linear, 5–9 × 0.3–0.4 cm, almost glabrous, margin entire, remotely denticulate, or rarely remotely shallowly sublobulate, apex obtuse. Scapes brownish green, to 8 cm, ± equaling leaves, sparsely arachnoid at base but densely arachnoid below capitulum. Capitulum 1.5–3 cm wide. Involucre 5–7 mm wide, base rounded. Outer phyllaries 11–14, black but median part often blackish green, subimbricate, ovate to ovate-lanceolate, 3.5–5.5 × 1.6–2.5 mm, appressed, without a paler border, margin not ciliate, apex acute, pale pinkish, and often with small black horn or ± flat; inner phyllaries blackish, narrowly linear, 0.9–1.2 cm, apex corniculate. Outer ligules white or very pale yellowish white but outside striped blackish pink, flat; inner ligules pale yellowish with blackish apical teeth. Anthers without pollen. Stigmas abaxially blackish, adaxially gray, black pubescent. Achene unknown. Agamosperm.

● Wet subsaline meadows; ca. 3800 m. S Xinjiang.

Taraxacum albiflos is distinct in having a blackish involucre, whitish ligules, linear leaves, and anthers without pollen. In *T.* sect. *Leucantha*, *T. albiflos* can be compared with *T. candidatum*. The latter has green, pale-bordered outer phyllaries and a very sparsely arachnoid scape. Outside of *T.* sect. *Leucantha*, *T. albiflos* is similar to *T. staticifolium* of *T.* sect. *Tibetana*. *Taraxacum staticifolium* has flat (not corniculate), narrower, and not tightly appressed outer phyllaries with a ciliate margin and also ± yellow ligules.

3. Taraxacum album Kirschner & Štěpánek, Preslia 78: 54. 2006.

白蒲公英 bai pu gong ying

Herbs 10–14 cm tall. Petiole usually purple, narrowly winged in outer and middle leaves, ± unwinged in inner ones; leaf blade bright green and often with a purplish midvein, ± linear, 7–10 × 0.7–1.2 cm, subglabrous, margin almost entire, dentate, or irregularly lobed; lateral lobes (if present) 3 or 4 pairs, triangular, 3–4 × 3–4 mm, ± patent, blades of inner leaves often deeply dissected into linear to linear-triangular lobes; interlobes short, 3–4 mm wide, margin entire or with minute acute teeth near distal base of lobes; terminal lobe not distinct in middle leaves, to 2 cm in inner leaves, margin usually entire. Scapes brownish green, ± equaling leaves, densely arachnoid below capitulum. Capitulum 2–3 cm wide. Involucre 1–1.2 cm wide, base rounded to slightly truncate. Outer phyllaries 10–13, middle part dark blackish green and 0.6–1.5 mm wide, not imbricate, ovate, outermost ones 6–7.5 × 2.5–3.5 mm and ca. 1/2 as long as inner ones, ± appressed, with a very distinct whitish membranous 0.9–1.3 mm border, margin glabrous to sparsely ciliate at apex, apex distinctly corniculate; inner phyllaries 1.2–1.4 cm, corniculate below apex. Ligules outside pure white; outer ligules flat to cucullate, outside striped purplish gray; inner ligules white to slightly pinkish white, with grayish teeth. Stigmas grayish to blackish green. Anthers sparsely polliniferous; pollen grains irregular in size. Achene pale grayish, 3.9–4.2 mm; body apically spinulose and subabruptly narrowing into a cylindric to subcylindric 0.8–1 mm cone, spinules long and coarse; beak 4–5 mm, thin. Pappus pale yellowish, 6.5–7.5 mm. Fl. summer. Agamosperm.

Wet saline marshes, wet pastures, along rivers; 2000–3000 m. W Xinjiang [Kyrgyzstan].

Taraxacum album is a rather marginal species in this section, with some resemblance to species of *T.* sect. *Suavia*.

4. Taraxacum niveum Kirschner & Štěpánek, Preslia 78: 35. 2006.

雪白蒲公英 xue bai pu gong ying

Herbs 6–13 cm tall. Petiole usually pinkish, long, narrow, unwinged, base sparsely arachnoid; leaf blade dull green, linear, 6–8(–11) × 0.4–0.8(–1) cm, ± glabrous, margin usually shortly remotely lobed or sometimes subentire; lateral lobes 3 or 4 pairs, linear, to 4 mm, patent to bent upward, margin entire; interlobes usually 5–8(–10) × 1(–2) mm, margin entire; terminal lobe linear to linear-lingulate, (4–)6–10(–20) mm, margin entire. Scapes greenish, equaling or slightly overtopping leaves, glabrous or rarely with a few arachnoid hairs. Capitulum 1.5–2 cm wide. Involucre 6–7 mm wide, base ± rounded. Outer phyllaries 12–14, deep green but often suffused pinkish apically, imbricate, outermost ones ovate and 3–4.2 × 2.2–2.5 mm, middle ones ovate-lanceolate, 5–5.5 × 2–2.3 mm, and 1/3–1/2 as long as inner ones, appressed, with a ± distinct membranous to ± whitish (0.2–)0.3–0.4 mm wide border, margin entire or denticulate and usually sparsely ciliate near apex, apex flat; inner phyllaries 9–10 mm, apex flat. Ligules inside pure white; outer ligules almost flat, outside striped grayish pink; inner ligules with white apical teeth. Stigmas green. Anthers without pollen. Achene light grayish straw-colored, 3.8–4.1 × 0.9–1 mm; body subdensely coarsely spinulose above, ± gradually narrowing into a relatively thick cylindric 1–1.1 mm cone; beak 5–6 mm, thin. Pappus yellowish white, 4.5–5 mm. Fl. spring to early summer. Agamosperm. $2n = 32$.

Wet saline meadows, along rivers; ca. 1200 m. NW Xinjiang [Russia (Altai)].

5. Taraxacum dealbatum Handel-Mazzetti, Monogr. Taraxacum, 30. 1907.

粉绿蒲公英 fen lü pu gong ying

Herbs 10–20 cm tall. Petiole purple, narrow, unwinged; leaf blade mid-green to slightly bluish green, linear-oblanceolate, 7–13 × (0.7–)0.9–1.3(–2) cm, usually ± arachnoid, later often subglabrous, margin in outer leaves shallowly lobulate to sinuate-dentate but in middle leaves deeply lobed to dissected; lateral lobes 4–7 pairs, ± linear, 1–1.5(–2.2) mm wide, ± remote, ± patent, often bent upward, margin entire; interlobes usually 1.2–1.5(–2.5) mm wide, margin entire; terminal lobe usually ± linear, elongated, narrow, apex ± acute. Scapes greenish, ± overtopping leaves, arachnoid. Capitulum 2–2.5 cm wide. Involucre 6–7 mm wide, base ± subobconic. Outer phyllaries 12–18, deep green to dark green but with reddish apex, imbricate, usually lanceolate to ovate-lanceolate, outermost ones 4–5.2(–6) × (1.3–)1.6–2.5 mm and ca. 1/2 as long as inner ones, appressed, with ± distinct whitish 0.3–0.5 mm wide border, margin glabrous, apex often acuminate from ± ovate base, with a callosity near apex; inner phyllaries 1.1–1.4 cm, apex ± flat to callose. Ligules inside ± white; outer ligules ± flat, outside striped pink to grayish pink; inner ligules probably yellowish, ± flat, with pale reddish or reddish gray apical teeth. Stigmas pale green with darker pubescence. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 3.3–3.8 × ca. 0.9 mm; body subsparsely spinulose above, subabruptly narrowing into a subcylindric 0.8–1.1 × 0.3–0.4 mm cone, spinules coarse and distinct; beak 5–6 mm, ± thin. Pappus yellowish white, 5.5–6 mm. Fl. spring to early summer. Agamosperm.

Subsaline steppe depressions, pastures along rivers; 600–1000 m. Nei Mongol [Russia (Siberia)].

Taraxacum dealbatum was reported from Xinjiang (Higher Pl. China 11: 769. 2005), but this report is almost surely erroneous.

6. Taraxacum candidatum Kirschner & Štěpánek, Preslia 78: 36. 2006.

纯白蒲公英 chun bai pu gong ying

Herbs to 10 cm tall, delicate. Petiole purplish to greenish, narrow to narrowly winged, ± sparsely arachnoid; leaf blade ± mid-green, linear, 3–7 × (0.2–)0.3–0.5(–0.7) cm, sparsely arachnoid, margin often entire but sometimes dentate to shallowly lobed; lateral teeth or lobules mostly 4–7 pairs, narrowly triangular, mostly 1–1.5 mm, patent; interlobes broad, margin entire; terminal lobe not distinctly developed. Scapes brownish green, subequaling leaves, ± sparsely arachnoid. Capitulum 1.5–2 cm wide. Involucre 5–7 mm wide, base ± rounded. Outer phyllaries (10–)14–17, deep to light green, often with a narrow blackish middle strip, and darker apically, ± imbricate, outermost ones ovate and 4–5 × 2–2.7 mm, middle ones ovate-lanceolate, ca. 5 × 2 mm, and 1/3–1/2 as long as inner ones, appressed, with a membranous 0.1–0.2 mm wide border, margin almost glabrous, apex flat to callose; inner phyllaries 8–9 mm, apex flat. Ligules inside pure white; outer ligules almost flat, outside striped pinkish or faintly gray pinkish; inner ligules white, with white or pinkish apical teeth. Stigmas grayish green to almost black. Anthers without pollen. Achene light grayish, (3.7–)4–4.5 × ca. 0.9 mm; body almost smooth below, subsparsely spinulose above, gradually narrowing into a subcylindric 0.7–1(–1.1) mm cone, spinules thin and erect-patent; beak 3.2–5.5 mm, thin. Pappus yellowish white, 5–6.5 mm. Fl. spring to summer. Agamosperm.

Temporarily wet subsaline to saline alpine grasslands, wet saline meadows in mountains; 2000–3000 m. S Xinjiang, W Xizang [Afghanistan, India, Tajikistan].

In areas adjacent to China *Taraxacum candidatum* reaches an elevation of ca. 5300 m.

7. Taraxacum sinicum Kitagawa, Bot. Mag. (Tokyo) 47: 826. 1933.

华蒲公英 hua pu gong ying

Taraxacum sinense Dahlstedt, Acta Horti Gothob. 2: 168. 1926, not Poiret (1816); *T. borealisinense* Kitamura, nom. illeg. superfl.

Herbs 8–15(–25) cm tall. Petiole brownish purple, narrow; leaf blade ± mid-green, linear-oblanceolate, 7–10(–15) × 0.6–1 cm, subglabrous to sparsely arachnoid, margin usually pinnatilobed, pinnatisect, or very deeply dissected or rarely undivided; lateral lobes 5–7(–9) pairs, linear to linear-triangular, ± recurved; interlobes narrow, usually 5–7 mm, margin entire; terminal lobe narrow, elongated, base sagittate, apex ± acute. Scapes brownish green, ± overtopping leaves, arachnoid and

densely so below capitulum. Capitulum 1.5–2.5 cm wide. Involucre 6–7(–8) mm wide, ± subobconic at base. Outer phyllaries 16–18, yellowish green with red apex to dark green and often suffused reddish, imbricate, outermost ones ovate-lanceolate and 4.5–6.5 × 1.8–2.7 mm, middle ones ± lanceolate, 7–8 × 1.5–2 mm, and 1/3–1/2 as long as inner ones, appressed, with a ± conspicuous membranous to whitish 0.2–0.4 mm wide border, margin glabrous, apex ± flat to slightly callose; inner phyllaries 10–13 × ca. 1 mm, apex flat. Ligules deep yellow; outer ligules ± flat, outside striped dark gray; inner ligules with yellow to grayish apical teeth. Stigmas greenish gray. Anthers polliniferous; pollen grains irregular in size. Achene light grayish, 3.5–4.4 × 0.9–1 mm; body subsparsely to ± densely spinulose above, ± gradually narrowing into a thick subcylindric 0.7–1 mm cone, spinules coarse with uppermost ones curved upward; beak 5–6.5 mm, base ± thick. Pappus yellowish white, 6.5–7 mm. Fl. spring to summer. Agamosperm. $2n = 24$.

Subsaline pastures, temporarily wet grasslands, substeppe depressions; 600–2000 m. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi [Kyrgyzstan, Mongolia, Russia (Altai)].

Reports of *Taraxacum sinicum* (as *T. borealisinense*) from Henan, Hubei, Hunan, Sichuan, and Yunnan (FRPS 80(2): 18. 1999; Higher Pl. China 11: 770. 2005) are incorrect.

8. Taraxacum armeriifolium Soest, Feddes Repert. 70: 61. 1965.

全叶蒲公英 quan ye pu gong ying

Taraxacum oblanceifolium D. Z. Ma.

Herbs 4–10(–15) cm tall. Petiole purplish to greenish, narrow; leaf blade ± light green to slightly grayish green, linear to linear-oblanceolate, 4–8(–11) × 0.5–0.9 cm, ± glabrous, margin usually deeply lobed to dissected but sometimes entire; lateral lobes 3–7 pairs, linear, linear-triangular, or narrowly triangular, ± recurved; interlobes short, margin entire; terminal lobe elongated, narrow, apex ± acute. Scapes brownish green, ± equaling leaves, ± sparsely arachnoid and densely so below capitulum. Capitulum 1.5–2.5 cm wide. Involucre 5.5–7.5 mm wide, base subconic. Outer phyllaries 12–15, light green with darker tips, ± imbricate, outermost ones ovate and 3.5–5.5 × 1.7–3 mm, middle ones ovate-lanceolate, ca. 6.5 × 2.5 mm, and ca. 1/2 as long as inner ones, appressed, with a membranous to whitish 0.5–1 mm wide border, margin glabrous, apex ± flat; inner phyllaries 0.9–1.2 cm, apex callose to flat. Ligules yellow; outer ligules canaliculate to involute, sometimes ± flat, outside striped pinkish gray to grayish purple; inner ligules often subtubular or cucullate, with dirty yellow apical teeth. Stigmas yellow to pale grayish yellow. Anthers polliniferous; pollen grains irregular in size. Achene light grayish, 4–4.7 × 1–1.1 mm; body ± sparsely spinulose above, gradually narrowing into a ± subconic (0.8–)1–1.3 × 0.5–0.6 mm cone, spinules short with some coarse; beak 2–3 × 0.2–0.3 mm. Pappus whitish, 5–6 mm. Fl. spring to summer. Agamosperm. $2n = 24$.

Saline areas, temporarily wet to wet pastures and grasslands, substeppe areas; 1500–2800 m. Hebei, Ningxia, Xinjiang, Xizang [Afghanistan, India, Mongolia, Tajikistan].

In areas adjacent to China *Taraxacum armeriifolium* reaches an elevation of ca. 4800 m.

9. Taraxacum ikonnikovii Schischkin, Fl. URSS 29: 736. 1964.

大头蒲公英 da tou pu gong ying

Herbs 10–15(–25) cm tall. Petiole usually purplish or greenish, unwinged; leaf blade mid-green, ± linear to linear-oblanceolate, (4–)6–9(–15) × 0.6–1(–1.5) cm, ± subglabrous, margin usually pinnatisect or rarely ± entire; lateral lobes 4–6 pairs, linear-triangular to narrowly triangular, 3–8 × 3–4 mm, recurved, margin entire; interlobes short, 3–4 mm wide, margin entire; terminal lobe elongated, linear-triangular, base sagittate, margin entire, apex acute. Scapes greenish, sparsely arachnoid mainly below capitulum. Capitulum 2–2.5 cm wide. Involucre 7–10 mm wide, base rounded. Outer phyllaries 13–17, deep green to dark green, conspicuously imbricate, ovate to broadly ovate, outermost ones 4–5(–7.5) × (2–)2.5–3.5 mm and 1/4–1/2 as long as inner ones, appressed, with a distinct whitish membranous 0.4–0.8 mm border, margin glabrous to sparsely ciliate at apex, apex ± corniculate; inner phyllaries 1–1.3 cm, ± corniculate below apex. Ligules inside yellow to pale yellow; outer ligules flat, outside striped gray. Stigmas pale green. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 3.9–4.5 mm; body apically subsparsely spinulose, gradually narrowing into a ± cylindric 0.9–1.2 mm cone, spinules thin, erect-patent; beak 5–7(–8) mm, thin. Pappus slightly yellowish white, 5–6 mm. Fl. summer. Agamosperm.

Wet subsaline meadows, pastures along rivers; 3600–4000 m. SW Xinjiang [Tajikistan].

10. Taraxacum luridum G. E. Haglund, Bot. Not. 1938: 307. 1938.

红角蒲公英 hong jiao pu gong ying

Herbs 5–10 cm tall. Petiole usually greenish, seldom pinkish, ± narrowly winged; leaf blade mid-green to slightly bluish green, ± linear, 5–7(–8) × 0.6–0.9(–1.1) cm, ± subglabrous or glabrous, margin usually sinuate-dentate to pinnatilobed but often entire to subentire; lateral lobes 4–8 pairs, linear to linear-triangular, to 6 × 0.5–1.3 mm, usually patent, sometimes recurved or curved upward, margin ± entire; interlobes 5–10 mm, entire; terminal lobe often elongated, to 1.5 cm, sometimes not distinct, entire. Scapes greenish brown, subequaling leaves, sparsely arachnoid, later glabrescent. Capitulum 2–2.5 cm wide. Involucre 6–8 mm wide, base rounded. Outer phyllaries 8 or 9(–13), ± not imbricate, broadly ovate to ovate-lanceolate, outermost ones 4–5 × 2.7–3 mm and 2/5–1/2 as long as inner ones, appressed to loosely so, middle ones dark green and 0.8–1.5 mm wide, with a gradual transition into a pale whitish green or membranous 0.5–0.8(–1) mm border, margin glabrous to sparsely ciliate at apex, apex callose to corniculate; inner phyllaries 1–1.1 cm, ± corniculate below apex. Ligules flat; outer ligules outside striped greenish gray to pinkish gray, inside white; inner ligules pale yellowish at base but otherwise white. Stigmas pale grayish yellowish green. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, (3.5–)3.8–4.2(–4.5) mm; body apically sub-

sparsely spinulose, subgradually narrowing into a ± cylindric medium-thick (0.7–)0.9–1.2 mm cone, spinules coarse; beak 3–4.2 mm, ± thin. Pappus brownish pinkish white, 5–6 mm. Fl. summer. Agamosperm. 2*n* = 24.

Subsaline meadows, along streams; 2800–5000 m. SW Xinjiang, S Xizang [India, Kyrgyzstan, Tajikistan].

11. Taraxacum pseudoleucanthum Soest, Proc. Kon. Ned. Akad. Wetensch., C, 69: 365. 1966.

假白花蒲公英 jia bai hua pu gong ying

Herbs 5–10 cm tall. Petiole pinkish or greenish, 2–4 mm wide, very narrowly winged; leaf blade ± mid-green, linear to linear-oblanceolate, 5–8 × 0.6–0.9 cm, subglabrous, margin usually remotely dentate to lobulate but often subentire; lateral lobules or teeth 3–6 pairs, triangular to broadly triangular, 0.5–1(–2.5) mm, ± recurved; interlobes broad, undivided part of blade usually broader than divided one, margin entire; terminal lobe usually not discernible, apex subacute. Scapes brownish green, ± equaling leaves, arachnoid. Capitulum 1.5–2 cm wide. Involucre 5–6 mm wide, base ± rounded to subconic. Outer phyllaries 12–15, green to light green, slightly imbricate, ovate-lanceolate, outermost ones 3–3.5 × (1.2–)3–3.5 mm and 2/5–1/2 as long as inner ones, appressed, with a ± distinct membranous 0.2–0.3 mm wide border, margin subglabrous to sparsely ciliate, apex ± flat to callose; inner phyllaries 8–9(–10) mm, apex flat to corniculate. Ligules probably inside white or pale yellowish; outer ligules flat, outside striped grayish pink or grayish. Stigmas yellow to dirty yellow. Anthers polliniferous; pollen grains irregular in size. Achene grayish, 3.5–3.9 × 0.8–0.9 mm; body ± subsparsely spinulose above, gradually narrowing into a subcylindric 0.5–0.6(–0.8) mm cone, spinules thin, erect-patent, and acute; beak 4–5 mm, thin. Pappus yellowish white, 4–5 mm. Fl. summer. Agamosperm.

Pastures along rivers, mountain slopes; 3500–3800 m. S Xinjiang [India, Kyrgyzstan, Tajikistan].

12. Taraxacum iliense Kirschner & Štěpánek, **sp. nov.**

伊犁蒲公英 yi li pu gong ying

Type: China. Xinjiang: “Ad ripam fluminis Ili He [伊犁河], haud procul ab oppido Yining [伊宁],” 30 Sep 2004, *P. Sekerka, P. Hanzelka & I. Bulánková 04/32*, cultivated as JŠ 7955 (holotype, PRA; isotypes, A, MO, PE).

Plantae agamospermae foliis pinnatisectis lobis lateralibus remotis, recurvatis, angustis, vulgo integris, phyllariis involucralibus exterioribus adpressis, imbricatis, late ovatis usque anguste lanceolatis, viridibus, marginibus albo-membranaceis, ligulis saturate luteis, stigmatibus sordide luteis, antheris polliniferis, acheniis eximie longis, subalatis, sparse spinulosis, sensim in pyramidem longam abeuntibus.

Herbs 10–17 cm tall. Petiole grayish purple, unwinged; leaf blade grayish mid-green with a grayish purple midvein, ± linear, 12–16 × (1.2–)1.5–1.8 cm, ± subglabrous, pinnatisect; lateral lobes 5 or 6 on each side, usually alternate, narrowly triangular or from a broader base abruptly narrowed into linear-oblong distal part, 5–8 × 3–4 mm, usually recurved, proximal margin entire, distal margin entire or with a single tooth, apex acute; interlobes 8–14 × 2–3(–4) mm, margin entire or with a single tooth; terminal lobe narrowly triangular, 1.5–2 × 0.8–1.4 cm, margin entire but distally concave, apex acuminate. Scapes greenish brown to purplish, ± equaling leaves, arachnoid. Capitulum 3–3.5 cm wide. Involucre 6–8 mm wide, base flat-rounded. Outer phyllaries with deep green middle part and a gradual transitioning into whitish membranous to 1 mm border but later in season with only a 0.2–0.4 mm wide border; outer phyllaries in early spring plants 11–14, suffused reddish in distal ca. 1/3, ± imbricate, broadly ovate to ovate-lanceolate, outermost ones 4–5 mm and to 1/2 as long as inner ones, appressed, apex callose to corniculate; outer phyllaries in early summer flowering plants 18–21, conspicuously imbricate, ovate-lanceolate to narrowly lanceolate, outermost ones 5–6 × 2.5–3 mm and 2/5–1/2 as long as inner ones, apex usually reddish callose; inner phyllaries ca. 1.2 cm, flat to ± corniculate below apex. Ligules deep yellow, ± flat; outer ligules outside striped purplish grayish brown; inner ligules canaliculate, with purplish apical teeth; ligule tube pubescent. Stigmas dirty yellow. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 5.2–5.7 × ca. 1 mm; body with prominent lateral ridges, ± sparsely spinulose mainly on ridges in upper ca. 2/3 and elsewhere in upper ca. 1/3, very gradually narrowing into a thick ± subconic 1.3–1.5 mm cone, spinules long, thin, and erect and with some also on cone; beak 4.5–5 mm, ± thin. Pappus ± white, ca. 7 mm. Fl. spring and summer. Agamosperm.

● Alluvial pastures, shrubby meadows; ca. 600 m. W Xinjiang.

13. Taraxacum patiens Kirschner & Štěpánek, **sp. nov.**

冷静蒲公英 leng jing pu gong ying

Type: China. Xizang: “In urbe Lhasa [拉萨市],” 31 Jul 1992, *L. Businská & R. Businský 13*, cultivated as JŠ 5110 (holotype, PRA; isotypes, A, MO, PE).

Paratypes: China. Sichuan: “Dêgê [德格], S of the town,” 6 Jun 1992, *L. Businská & R. Businský 4*, cultivated as JŠ 5122 (PE, PRA). Xizang: “In urbe Lhasa [拉萨市],” 31 Jul 1992, *L. Businská & R. Businský 13*, cultivated as JŠ 5111 (PE, PRA); “Valley of Lhasa He [拉萨河] river, the village of Kacchäl (ca. 40 km E of the city of Lhasa [拉萨市]),” ca. 3650–3850 m, 20 Jun 2002, *M. Štefánek 57b*, cultivated as JŠ 7837 and JŠ 7839 (PRA); “The town of Shigatse [日喀则], valley between Shigatse and the monastery of Shalu Gön [夏鲁寺] S of the town,” ca. 3650–3850 m, 8 Jun 2002, *M. Štefánek 41*, cultivated as JŠ 7818, JŠ 7819, JŠ 7820 (PRA).

Plantae agamospermae foliis pinnatisectis lobis lateralibus patentibus lingulatis Taraxaci sherriffii Soest *similes, phyllariis involucralibus exterioribus adpressis imbricatis vel subimbricatis* T. sinici Kitagawa *proximae, stigmatibus sordide luteis vel luteo-viridibus, antheris polliniferis, acheniis pallide griseo-stramineis sparse spinulosis, in pyramidem subcylindricam crassam sensim abeuntibus, rostro brevi, pappo sordide albido 6–7 mm longo.*

Herbs (10–)14–30 cm tall. Petiole purple, narrow; leaf blade ± light grayish mid-green, linear-oblanceolate to linear, 6–15 × 1.3–2.1 cm, sparsely arachnoid, pinnatisect; lateral lobes 6 or 7 pairs, from a broad base abruptly narrowing into a lingu-

late-linear distal part, 5–10 × 2–3 mm, patent to slightly subrecurved, proximal margin ± straight and entire or with one tooth, distal margin concave to sigmoid and entire or with one tooth; interlobes to 12 × 2 mm, margin ± entire; terminal lobe 3-partite, basal segments patent, terminal segment lingulate-elongated, 7–14 × 2.5–4 mm, and apex ± acute. Scapes brownish green, ± overtopping leaves, arachnoid. Capitulum ca. 2 cm wide. Involucre 6–7 mm wide, base subobconic. Outer phyllaries in early flowering plants 9–15, dark olivaceous green with reddish brown apex, ± not imbricate, ovate to lanceolate, 3.5–6.5 × 2–3.5 mm, appressed, with a ± conspicuous whitish green to 0.5 mm wide border, apex ± flat to callose; outer phyllaries in late flowering plants 17–22, imbricate, lanceolate to linear-lanceolate, 4.5–6 × 1.8–2.6 mm, with light green middle part and a whitish green or membranous ca. 0.5(–0.8) mm wide border; inner phyllaries ca. 1 cm, apex ± flat. Ligules yellow; outer ligules ± flat, outside striped pinkish pale gray; inner ligules with yellow to dirty yellow apical teeth; ligule tube pubescent. Stigmas dirty yellow to yellowish green. Anthers polliniferous; pollen grains irregular in size. Achene light ochraceous grayish to light gray, 4.5–4.8 × 0.9–1 mm; body sparsely spinulose above, ± gradually narrowing into a thick subcylindric 1.2–1.5 × ca. 0.4 mm cone, spinules thin and erect-patent; beak 3.5–4.5 mm. Pappus yellowish white, 6–7 mm. Fl. spring to summer. Agamosperm.

● Subsaline pastures, flooded meadows, grasslands; 3400–3900 m. W Sichuan, S Xizang.

14. Taraxacum cereum Kirschner & Štěpánek, **sp. nov.**

蜡黄蒲公英 la huang pu gong ying

Type: China. Xinjiang: “Montes Tian Shan [天山], pars montium Borohoro Shan [婆罗科努山]: lacus Sayram Hu,” 29 Sep 2004, *P. Sekerka, P. Hanzelka & I. Bulánková 04/26*, cultivated as JŠ 7964 (holotype, PRA; isotypes, A, MO, PE).

Plantae agamospermae foliis subintegris usque profunde pinnatisectis araneosis, lobis lateralibus ± linearibus, capitulis subopertis pallide luteolis usque cereis, phyllariis involucralibus exterioribus ± ovatis, deinde ± lanceolatis late pallide marginatis, flosculis exterioribus canaliculatis, interioribus subtubulosis tubo pubescente, stigmatibus obscure luteo-viridibus, acheniis robustis, grosse subsparse spinulosis, spinulis saepe sursum curvatis, corpore in pyramidem subcylindricam crassam ca. 1 mm longam subabrupte transiente.

Herbs 16–22 cm tall. Petiole purplish, narrow, brownish arachnoid at base; leaf blade ± light green, linear to narrowly oblanceolate, 8–14 × (0.2–)0.8–2.7 cm, arachnoid, in early flowering plants margin subentire or denticulate but in later plants pinnatisect; lateral lobes in late flowering plants 5–8 pairs, ± linear to linear-triangular, 7–13 × 1–3 mm, ± patent, margin entire, apex acute; interlobes 5–12 × ca. 2 mm, margin entire; terminal lobe lingulate-elongated, narrow, 3-partite, basal segments patent, terminal segment 2.5–4 × 0.3–0.5 cm and apex ± acute. Scapes brownish purple, ± equaling leaves, ± densely arachnoid and densely so below capitulum. Capitulum not fully opening, ca. 2 cm wide. Involucre 7–9 mm wide, base subtruncate. Outer phyllaries 12–16 and ovate-lanceolate to broadly ovate in early plants, 15–25 and ± lanceolate in later flowering plants, deep green with darker apical part, ± imbricate, outermost ones 5–7 × 2.5–3.5 mm and ca. 1/2 as long as inner ones, appressed to loosely appressed, with membranous to whitish green border to 1.1 mm wide, margin glabrous and minutely sparsely denticulate, apex ± callose; inner phyllaries ca. 1 cm, apex callose or subcorniculate. Ligules pale cream yellow or pale yellowish white, deeper so at base; outer ligules canaliculate, ± erect, outside striped gray purplish; inner ligules subtubular, with reddish or cream apical teeth; ligule tube densely pubescent. Stigmas yellowish green, almost not exserted in outer florets, not exserted in inner florets, blackish pubescent outside. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, robust, 4.2–4.4 × ca. 1.2 mm; body subsparsely spinulose above, subabruptly narrowing into a subcylindric ca. 1 × 0.4 mm cone, spinules coarse, curved upward, larger on ridges, and usually 1 or 2 on cone; beak 6–7 mm. Pappus dirty white, ca. 7 mm. Fl. spring to summer. Agamosperm.

● Mountain calcareous pastures; 2100–2200 m. W Xinjiang.

3. Taraxacum sect. **Stenoloba** Kirschner & Štěpánek, Folia Geobot. 39: 261. 2004.

深裂蒲公英组 shen lie pu gong ying zu

Leaves usually pinnatisect to deeply dissected. Outer phyllaries usually numerous, ovate-lanceolate to linear-lanceolate, most often loosely appressed to recurved at apex or ± patent, narrowly pale bordered, outer and/or inner ones usually corniculate to horned. Florets yellow. Achene narrow, almost smooth below, ± densely spinulose in upper ca. 1/4; body usually gradually to subgradually narrowing into a ± thin cylindric or rarely subcylindric usually 0.9–1.2 × 0.2–0.3 mm cone, spinules minute; beak 7–9 mm, thin.

About seven species: China, Kazakhstan, Mongolia, Russia; four species (two endemic) in China.

Members of this section usually occur in dry substeppe to steppe habitats with a center of distribution in Mongolia and Russia (S Siberia).

The name *Taraxacum* sect. *Sinensia* Soest (Wentia 10: 9. 1963) was often used for *T.* sect. *Stenoloba* (e.g., Soest in K. H. Rechinger, Fl. Iranica 122: 238. 1977; FRPS 80(2): 16. 1999). The former name is a taxonomic synonym of *T.* sect. *Leucantha* (Kirschner & Štěpánek, Taxon 46: 96. 1977).

The name *Taraxacum heterolepis* Nakai & Koidzumi ex Kitagawa (Bot. Mag. (Tokyo) 47: 829. 1933) is based on a holotype specimen that lacks important characters and cannot be safely classified, not even to the section. It is accepted in FRPS (80(2): 80. 1999) as the correct name for *T. multisectum* (see below) but differs from the latter in the shape and posture of outer phyllaries and in important achene features.

Type material of the name *Taraxacum falcilobum* Kitagawa (Rep. Inst. Sci. Res. Manchoukuo 2: 312. 1938), also referred to this group in FRPS

(80(2): 19. 1999), was not traced, and the protologue does not give relevant information as to its taxonomic position. The name is therefore listed among names awaiting further study.

Representatives of this section often appear under the name *Taraxacum asiaticum*, the lectotype of which (Kirschner & Štěpánek, Preslia 83: 498. 2011) proved to belong to *T. scariosum* (see below), a taxon often called *T. stenolobum*. *Taraxacum asiaticum* was reported to occur in a number of Chinese provinces (FRPS 80(2): 19. 1999), but a revision of the material is required.

1a. Stigmas yellow ..... 16. *T. scariosum*
1b. Stigmas discolored (grayish green, greenish).
2a. Outer phyllaries 20–24, 1–1.5 mm wide ..... 15. *T. sinomongolicum*
2b. Outer phyllaries 13–17, 2–4 mm wide.
3a. Achene body with short dense spinules, beak 7–9 mm ..... 17. *T. abax*
3b. Achene body with long subdense spinules, beak 10–11 mm ..... 18. *T. multisectum*

15. Taraxacum sinomongolicum Kitagawa, Neo-Lin. Fl. Manshur. 687. 1979.

凸尖蒲公英 tu jian pu gong ying

Taraxacum cuspidatum Dahlstedt, Acta Horti Gothob. 2: 171. 1926, not Marklund (1911).

Herbs 12–15(–30) cm tall. Petiole usually purplish at base or greenish, unwinged; leaf blade mid-green, ± linear to linear oblanceolate, (8–)10–12(–16) × 0.8–1.5(–2) cm, ± subglabrous, ± pinnatisect; lateral lobes (3 or)4–6 pairs, linear-triangular to narrowly triangular, 3–8 × 3–4 mm, recurved to ± patent, margin usually entire; interlobes 2–3(–4) mm wide, margin entire; terminal lobe narrowly triangular, sometimes elongated, base sagittate, margin entire, apex acute. Scapes greenish, sparsely arachnoid but more densely arachnoid below capitulum. Capitulum ca. 2 cm wide. Involucre 7–8 mm wide, base ± rounded. Outer phyllaries 20–24, deep green to pale green, ± imbricate, lanceolate to narrowly lanceolate but outermost ones sometimes linear, outermost ones 4–5.5(–7.5) × 1–1.5 mm and 2/5–1/2 as long as inner ones, appressed to loosely so, with a evident whitish membranous 0.2–0.3 mm border, margin glabrous to sparsely ciliate, apex flat; inner phyllaries 1–1.2 cm, apex ± corniculate. Ligules ± yellow; outer ligules flat, outside striped grayish green. Stigmas light greenish. Anthers polliniferous; pollen grains irregular in size. Achene pale grayish, 3.9–4.2 × 0.8–1 mm; body apically ± densely spinulose, gradually narrowing into a ± cylindric 0.9–1 mm cone, spinules short and erect-patent; beak ca. 6 mm, thin. Pappus slightly yellowish white, ca. 6 mm. Fl. summer. Agamosperm.

● Dry grasslands; 1400–2000 m. Hebei, Nei Mongol.

16. Taraxacum scariosum (Tausch) Kirschner & Štěpánek, Preslia 83: 498. 2011.

深裂蒲公英 shen lie pu gong ying

Leontodon scariosus Tausch, Flora 12(Ergänz. 1): 34. 1829; *Taraxacum asiaticum* Dahlstedt; *T. asiaticum* var. *lonchophyllum* Kitagawa; *T. commixtiforme* Soest; *T. stenolobum* Stscheglejew.

Herbs 12–20(–25) cm tall. Petiole usually faintly purplish to purple at base, unwinged; leaf blade mid-green to light green, narrowly oblanceolate, 12–15 × 1.3–2.5 cm, arachnoid, margin deeply dissected; lateral lobes 6–10 pairs, linear, ± patent, sometimes slightly bent upward or downward, often ± wider at base where divided into sharp linear lobules or teeth; interlobes 5–12 × 1.5–2 mm, margin with numerous usually patent linear acute lobules and/or teeth; terminal lobe 3-partite, apical segment linear and apex acute; late summer leaves with broader linear lobes to 8 mm wide. Scapes greenish brown, arachnoid but more densely arachnoid below capitulum. Capitulum 2–3 cm wide. Involucre 0.9–1.1 cm wide, base rounded. Outer phyllaries 14–18, yellowish green to green and usually slightly suffused pinkish, ± imbricate, lanceolate to broadly lanceolate but inner ones more narrowly so, outermost ones 5–7(–8.5) × (1.8–)2.5–2.8 mm and 2/5–3/5 as long as inner ones, appressed, later ± erect, with whitish 0.2–0.3 mm border more distinct in apical part and often pinkish, margin arachnoid ciliate, apex initially ± flat to minutely corniculate but corniculate in later flowering capitula; inner phyllaries 1.2–1.4 cm, apex ± corniculate. Ligules yellow; outer ligules flat, outside striped gray to grayish pink; inner ligules with reddish apical teeth. Stigmas pure yellow to pale grayish yellow. Anthers polliniferous; pollen grains irregular in size. Achene pale grayish straw-colored, 4.2–4.7 × ca. 0.8 mm; body apically subsparsely to ± densely spinulose, ± gradually narrowing into a subcylindric 0.8–1 mm cone; beak 8–9 mm, thin. Pappus white, 6–7 mm. Fl. spring and summer. Agamosperm. $2n = 24$.

Dry steppe and substeppe habitats, roadsides, dry pastures; 900–3000 m. Hebei, Heilongjiang, Nei Mongol, Shanxi, ?Xinjiang, Xizang [Kazakhstan, Mongolia, Russia (Altai)].

The report of *Taraxacum scariosum* (as *T. asiaticum*) from Xinjiang (FRPS 80(2): 19. 1999) is probable but needs to be confirmed, as do those from Gansu, Hubei, Jilin, Liaoning, Qinghai, Shaanxi, and Sichuan.

The name, most often covering this species in the Russian and Chinese literature, *Taraxacum stenolobum*, was usually used in a very broad concept. The same applies to another frequently used name, *T. asiaticum*, for which the original material is very heterogeneous and the lectotype represents *T. scariosum*. We use the oldest epithet in a narrow sense of a single very widespread agamospermous species, within this section distinct in having yellow stigmas, very narrow achenes, narrow appressed outer phyllaries, and short corniculation.

17. Taraxacum abax Kirschner & Štěpánek, Preslia 83: 504. 2011.

平板蒲公英 ping ban pu gong ying

Herbs 10–20 cm tall. Petiole usually purple at base, unwinged; leaf blade dull green to mid-green, narrowly oblanceolate, 7–10 × 1.5–2.8 cm, arachnoid, margin deeply dissected; lateral lobes 6–9 pairs, linear to linear-lingulate, 8–14 × 1–2(–2.5) mm, ± patent, sometimes slightly bent upward or downward, margin ± entire; interlobes 6–10 × 1–2 mm, margin

with a few linear patent acute lobules or teeth; terminal lobe 3-partite, apical segment linear to linear-lingulate, 10–15 × 1.5(–3) mm, and apex acute; late summer leaves with broader lobes. Scapes greenish brown, ± equaling leaves, arachnoid but later sparsely so. Capitulum 2–3 cm wide. Involucre 1–1.2 cm wide, base ± rounded. Outer phyllaries 13–17, deep green to ± dark green, usually slightly glaucous and often suffused reddish in upper part, subimbricate, ± lanceolate, outermost ones 7–9(–10) × (2.2–)2.6–3.1 mm and ca. 3/5 as long as inner ones, loosely appressed to ± erect, some slightly recurved at apex, with whitish membranous ca. 0.3 mm border, margin ± glabrous, apex with distinct horn or corniculate; inner phyllaries 1.2–1.5 cm, narrow, apex distinctly corniculate. Ligules deep yellow; outer ligules flat, outside striped grayish greenish pink; inner ligules with reddish apical teeth. Stigmas grayish green, densely dark pubescent. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 3.9–4.3 × 0.8–0.9 mm; body apically ± densely shortly spinulose, subgradually to subabruptly narrowing into a thin cylindric 0.9–1.2 mm cone, spinules thin; beak 7–9 mm, thin. Pappus yellowish white, 6.5–7 mm. Fl. spring and summer. Agamosperm. 2*n* = 24.

Dry substeppe grasslands, pastures, roadsides; 700–2000 m. Hebei, Xinjiang [Russia (Siberia)].

18. Taraxacum multisectum Kitagawa, Rep. Inst. Sci. Res. Manchoukuo 2: 310. 1938.

异苞蒲公英 yi bao pu gong ying

Herbs 11–20 cm tall. Petiole pale green or purplish, sparsely arachnoid at very base but otherwise glabrous, unwinged; leaf blade mid-green, narrowly oblong, 7–16 × 1.2–2.4 cm, sparsely arachnoid, pinnatipartite; lateral lobes 3–5 pairs, ± linear, 8–16 × 1.2–2.3 mm, ± patent, margin ± entire, apex acute; interlobes 3–12 × 1–2 mm, margin filiform-dentate or lobulate; terminal lobe 3-partite, margin of segments entire, apex acute. Scapes brownish green, ± overtopping leaves, arachnoid. Capitulum 3–3.5 cm wide. Involucre 0.9–1.1 cm wide, base rounded. Outer phyllaries 10–14, dark green, margin and apical part often purple, with a gradual transition into paler border and a sharply delimited whitish ca. 0.3 mm wide border, not imbricate, usually broadly lanceolate to narrowly ovate, outermost ones (6–)7–9 × (2–)2.5–4 mm and ca. 1/2 as long as inner ones, appressed, later to erect-patent, margin ± glabrous or sparsely ciliate, apex ± callose, rarely flat; inner phyllaries 1.4–1.6 cm, apex ± flat to corniculate. Ligules yellow; outer ligules ± flat, outside striped gray. Stigmas grayish green. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 4.6–5 × 0.8–0.9 mm; body subsparsely spinulose above, gradually narrowing into a ± cylindric 0.9–1 mm cone, spinules long with longest ones to 0.5 mm, thin, erect-patent, acute, and some also on cone base; beak 1–1.1 cm, thin. Pappus ± white, ca. 7 mm. Fl. spring. Agamosperm.

● Steppe grasslands, pastures; below 100–300 m. Jilin, Liaoning, ?Nei Mongol.

The occurrence of *Taraxacum multisectum* in Nei Mongol is probably correct, but this record needs to be confirmed.

Taraxacum multisectum is similar to *T. abax* but substantially differs in having conspicuously long spinules on the achenes, longer beak, not horned, and seldom corniculate outer phyllaries.

4. Taraxacum sect. **Oligantha** Soest, Wentia 10: 8. 1963.

短喙蒲公英组 duan hui pu gong ying zu

Plants small, base usually densely hairy. Leaves usually arachnoid; petiole ± unwinged; leaf blade deeply lobed; lobes usually patent. Involucre narrow, usually to 6 mm wide. Phyllaries abaxially sparsely to densely arachnoid or less often surface glabrous, margin often long ciliate; outer phyllaries 6–10(–12), imbricate or subimbricate, broadly lanceolate to ovate, usually less than 5–6(–7) mm, appressed, margin with paler central part, apically corniculate or with a horn at apex, horn usually blackish and erect. Receptacle glabrous or with a few arachnoid hairs. Florets few (usually less than 30 but sometimes less than 15), yellow. Achene grayish straw-colored brown to grayish brown, 5–6.5 mm; body almost smooth or very sparsely spinulose above, very gradually and indistinctly narrowing into beak, cone not visible or thick and broadly conic, spinules few and remote; beak 0.2–4 mm, thick. Pappus yellowish white to pale brownish, 4.5–6 mm, often fragile.

About 15–18 species: centered in C Asia; two species in China.

In addition to the species listed below, *Taraxacum pseudominutilobum* Kovalevskaja was reported to occur in China (FRPS 80(2): 12. 1999). However, this name is based on the material from the Chatkal Range, W Tian Shan, and Angren Plateau, both in Uzbekistan, and the material studied shows that it is probably confined to these regions. No similar plants from China were seen.

1a. Leaf blade undivided; ligules pale yellow; achene beak 1–2 mm ..... 19. *T. syrtorum*
1b. Leaf blade pinnatilobed; ligules mid-yellow; achene beak 0.2–1 mm ..... 20. *T. minutilobum*

19. Taraxacum syrtorum Dshanaëva, Fl. Kirgizii, Dopoln. 1: 115. 1967.

高山耐旱蒲公英 gao shan nai han pu gong ying

Herbs to 10 cm tall; plant base with remnants of old petioles. Petiole ± glabrous, unwinged; leaf blade ± light green, ± linear, 3–8 × 0.1–0.3(–0.5) cm, glabrous, not divided, margin entire or rarely minutely remotely dentate, apex subacute. Scapes greenish, ± equaling leaves, arachnoid and densely so below capitulum. Capitulum to 2 cm wide. Involucre 8–9 mm wide, base ± subobconic. Outer phyllaries 8–10(–12), light green often suffused pinkish in upper part, subimbricate, ± lanceolate to narrowly triangular, outermost ones 5–7(–8) × 2–3 mm and ca. 1/2 as long as inner ones, appressed, abaxial surface slightly arachnoid, with a narrow whitish membranous border, margin densely arachnoid, near apex pale to blackish

corniculate; inner phyllaries (8–)10–12 × 1.1–1.5 mm, apex corniculate. Ligules pale yellow (becoming pinkish); outer ligules flat, outside striped faintly grayish. Achene gray straw-colored brown, ca. 6 × 1 mm; body apically totally smooth, with cone not discernible; beak 1–2 mm, very thick. Pappus brownish white, 5–6 mm. Fl. summer.

High alpine and subsaline slopes; ca. 4000 m. W Xinjiang (Wuqia) [Kyrgyzstan].

20. Taraxacum minutilobum Popov ex Kovalevskaja, Bot. Mater. Gerb. Inst. Bot. Akad. Nauk Uzbeksk. S.S.R. 17: 6. 1962.

毛叶蒲公英 mao ye pu gong ying

Herbs to 8 cm tall, slender, delicate, tunic usually developed. Petiole pale green, densely arachnoid, unwinged but dilated at very base; leaf blade grayish green, linear to oblanceolate, 3–6 × 0.4–1.2 cm, densely arachnoid to lanate, sometimes glabrescent, pinnatipartite to pinnatisect; lateral lobes 3–5 pairs, narrowly oblong, 1.5–6 × 1–1.5 mm, patent, some subrecurved or pointing upward, margin entire; interlobes usually 2–4 × ca. 1 mm, margin entire but sometimes with a few minute teeth; terminal lobe 3-partite, margin entire, basal segments ± recurved, terminal segment to 16 × 1.5 mm and apex subacute to acute. Scapes ± green, shorter than leaves, arachnoid. Capitulum to 1.5 cm wide. Involucre narrow, 3–4 mm wide, base obconic. Outer phyllaries 8–13, grayish olivaceous green, subimbricate, lanceolate to narrowly lanceolate but outermost ones to ovate-lanceolate or triangular, outermost ones 4–6 × 2–3 mm and 1/3–1/2 as long as inner ones, ± appressed to loosely appressed, abaxially densely arachnoid, with a whitish membranous 0.2–0.5 mm wide border, apex with a distinct blackish horn to 1 mm; inner phyllaries usually 8 or 9, 8–10 × 1.5–2(–2.5) mm, abaxially arachnoid but later glabrescent, border pink, apex corniculate. Ligules yellow; outer ligules flat to canaliculate, outside striped dark; inner ligules with reddish or yellow apical teeth. Stigmas deep yellow. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, ± cylindric, 5.5–6.1 × ca. 1 mm, totally smooth or with almost indistinct sparse minute tubercles, cone not discernible; beak whitish, 0.5–1 mm. Pappus dirty yellowish white to white, 5–6 mm, easily breaking off. Fl. summer. Agamosperm.

Stony slopes in high mountains; 3500–4500 m. S Xizang [Afghanistan, India (Ladakh), Pakistan, Tajikistan, Uzbekistan].

The problem surrounding the name *Taraxacum brevirostre* Handel-Mazzetti (Monogr. Taraxacum, 46. 1907) requires further study. In the literature, this name usually covers what is here called *T. minutilobum*, in accordance with the majority of original syntypes. The lectotype of this name comes from the Pamirs (Pamir region, 3900–4600 m, *Alcock 17727*, lectotype BM, no. det. 8426, *fide* Soest in K. H. Rechiner, Fl. Iranica 122: 234. 1977), and the type is intermediate between *T.* sect. *Oligantha* and *T.* sect. *Atrata*. The taxon represented by the lectotype is known only from the type collection and has not been found in China, although reported from Gansu, Qinghai, and Xizang (FRPS 80(2): 14. 1999).

5. Taraxacum sect. **Calanthodia** (Dahlstedt) R. Doll, Gatt. Taraxacum, 59. 1974.

大头蒲公英组 da tou pu gong ying zu

Taraxacum [unranked] *Calanthodia* Dahlstedt, Acta Horti Gothob. 2: 144. 1926.

Plants robust. Petiole often winged; leaf blade shallowly to deeply lobed. Capitulum 3–6 cm wide. Involucre usually more than 1.5 cm wide. Outer phyllaries usually more than 10 × 4 mm, imbricate or not so, broadly ovate to lanceolate, appressed or rarely to patent, border usually distinct and pale, apex usually corniculate. Ligules yellow. Stigmas dark. Achene dark brown to straw-colored brown, large, usually 4.5–5.5 × 1.1–2 mm, ± densely spinulose above, subabruptly to abruptly narrowing into usually thick subconic to subcylindric 0.8–1.4 mm cone; beak usually 8–10 mm. Pappus white.

● Eight species: China.

The highest diversity of this section is in Sichuan. Sexuality is relatively common in this section.

1a. Outer phyllaries erect-patent to patent ..... 25. *T. grypodon*
1b. Outer phyllaries appressed to erect.
2a. Achene 0.9–1 mm thick.
3a. Stigmas yellow to greenish yellow, rarely in populations plants with blackish green stigmas; outer phyllaries 9–14, usually narrowly lanceolate to ovate-lanceolate ..... 23. *T. peccator*
3b. Stigmas black; outer phyllaries 13–17, usually ovate to ovate-lanceolate ..... 24. *T. forrestii*
2b. Achene 1.1–2 mm thick.
4a. Achene cone 1.2–1.4 mm.
5a. Leaves undivided to shallowly lobed, lateral lobes 3–5, interlobes well developed and entire ..... 22. *T. platypecidum*
5b. Leaves deeply pinnatisect, lateral lobes 5 or 6, interlobes with a large acute tooth or lobule ..... 24. *T. forrestii*
4b. Achene cone 0.4–1.1 mm.
6a. Outer phyllaries without a paler border or border green, very narrow, and indistinct.
7a. Outer phyllaries 17–25, lanceolate to narrowly lanceolate; achene 1.2–1.4 mm thick ..... 26. *T. lanigerum*
7b. Outer phyllaries 11–19, broadly ovate to ovate-lanceolate; achene 1.5–2 mm thick ..... 27. *T. lugubre*
6b. Outer phyllaries with a distinct paler (whitish to greenish white) border.
8a. Outer phyllaries narrowly lanceolate to linear-lanceolate, 1.2–1.5 cm; stigmas blackish purple but probably brownish gray when fresh ..... 28. *T. pseudonutans*

8b. Outer phyllaries broadly ovate to ovate-lanceolate, 0.6–1.3 cm; stigmas black, blackish green, or deep green.
9a. Outer phyllaries 2–4.5 mm wide; plants not robust, usually less than 10 cm tall ..... 24. *T. forrestii*
9b. Outer phyllaries 4–8 mm wide; plants robust, 10–35 cm tall.
10a. Pappus 8–11 mm ..... 21. *T. calanthodium*
10b. Pappus 6–7.5 mm ..... 27. *T. lugubre*

21. Taraxacum calanthodium Dahlstedt, Acta Horti Gothob. 2: 150. 1926.

丽花蒲公英 li hua pu gong ying

Taraxacum canitiosum Dahlstedt; *T. connectens* Dahlstedt.

Herbs 20–35 cm tall, robust. Petiole purplish, narrow; leaf blade pale green, oblanceolate to broadly oblanceolate, 9–15 × 3–4.5 cm, sparsely to densely arachnoid, margin shallowly lobed and remotely dentate to deeply lobed; lateral lobes 3–6, triangular to linear-triangular, patent, often with recurved distal part or recurved; interlobes short, lobulate; terminal lobe broad, apex subobtuse to acute and sometimes with a distinct terminal lobule. Scapes brownish green, overtopping leaves, apically yellowish arachnoid. Capitulum 5–6 cm wide. Involucre 1.5–2 cm wide, base broadly rounded. Outer phyllaries (12–)15–24, pale green at base, suffused reddish, and getting darker then blackish toward apex, ± imbricate or not so, ovate to ovate-lanceolate, outermost ones 9–13 × 4–8 mm and ca. 4/5 as long as inner ones, appressed, border white and 0.4–1.5 mm, margin sparsely ciliate, apex blunt and corniculate; inner phyllaries 1.6–1.8 cm but to 2.3 cm in fruit. Ligules yellow; outer ligules outside faintly striped purplish; inner ligules with pinkish apical teeth; floret tube sparsely puberulent. Stigmas blackish green to green. Anthers polliniferous; pollen grains slightly irregular in size, almost regular. Achene dark grayish brown, 4.5–5.1 × 1.1–1.7 mm; body ridged, densely spinulose above, spinulose on ridges throughout, ± abruptly narrowing into a 0.8–1 mm subconic or subcylindric cone; beak 8–11 mm. Pappus yellowish, 8–11 mm. Fl. summer. Sexual.

● Alpine and subalpine grassland slopes and meadows; 3000–4000 m. S Gansu, Qinghai, NW Sichuan, ?Xizang.

Taraxacum calanthodium may occur in E Xizang, but material was not seen by the present authors. Reports from Shaanxi (FRPS 80(2): 38. 1999; Higher Pl. China 11: 776. 2005) are incorrect.

The three names, *Taraxacum calanthodium*, *T. canitiosum*, and *T. connectens*, all described by Dahlstedt from Sichuan, belong to a taxon characterized by great variation. Only in cultivation was sexuality proven for all the morphotypes (in spite of inconspicuous size variation of pollen grains). *Taraxacum grypodon* may also belong to this taxon but it is kept separate as it has patent outer phyllaries. Ploidy level of the whole complex remains unknown (both diploids and sexual tetraploids are possible).

22. Taraxacum platypecidum Diels, Repert. Spec. Nov. Regni Veg. Beih. 12: 515. 1922.

白缘蒲公英 bai yuan pu gong ying

Taraxacum licentii Soest.

Herbs 12–40 cm tall, robust. Petiole narrow; leaf blade deep green, narrowly oblanceolate, (6–)10–18 × 2–4 cm, arachnoid, margin subentire, dentate, shallowly lobed, or rarely to deeply pinnatisect; lateral lobes 3–5, broadly triangular, recurved; interlobes (when developed) with margin entire. Scapes brownish green, overtopping leaves, white arachnoid but whitish to brownish tomentose below capitulum. Capitulum 4–5 cm wide. Involucre 1–1.3 cm wide, base ± rounded. Outer phyllaries 14–19, subimbricate, ovate-lanceolate to ovate, 8–15 × (2.5–)3–4.5(–6) mm, appressed to loosely so, not distinctly veined, median part blackish green, with a whitish green to whitish 1–2 mm wide border, margin conspicuously densely whitish ciliate and blackish callose below apex (sometimes surface arachnoid in upper ca. 1/3); inner phyllaries 1.5–1.7 cm. Ligules yellow; outer ligules outside striped faintly purplish gray. Stigmas blackish to dark green. Anthers without pollen or polliniferous; pollen grains irregular in size. Achene grayish brown to light brown, (4.5–)5.5 × 1.5–2 mm; body spinulose-squamulose in upper ca. 1/3, tuberculate below, ± abruptly narrowing into a thick subcylindric 1.2–1.4 mm cone; beak ca. 9.5 mm. Pappus yellowish dirty white, 7–9 mm. Fl. summer. Agamosperm.

● Subalpine meadow slopes; 1900–3000 m. Gansu, Hebei, Shanxi.

The report of *Taraxacum platypecidum* for a number of additional provinces and for Korea and Japan (FRPS 80(2): 43 1999; Higher Pl. China 11: 778. 2005) is probably incorrect. However, although not yet seen by the authors among the specimens studied, the species should be looked for in the mountainous provinces adjacent to Hebei and Shanxi.

23. Taraxacum peccator Kirschner & Štěpánek, **sp. nov.**

五台山蒲公英 wu tai shan pu gong ying

Taraxacum platypecidum Diels var. *angustibracteatum* Y. Ling.

Type: China. Hebei: “Kungtaoling, Hsiaowutaishan [小五台山], alpine meadow,” 2500 m, 11 Jul 1934, *C. W. Wang 61630* (holotype, PE, no. det. 18637).

Paratypes: China. Hebei: “Hsiaowutaishan [小五台山], T’ang-ch’ih-sze,” 1600 m, 19 Jul 1931, *T. P. Wang 925*, type of *Taraxacum platypecidum* var. *angustibracteatum* (PE, no. det. 18648); “Hsiaowutaishan [小五台山],” 3000 m, 6 Aug 1934, *C. W. Wang 62098* (PE, no. det. 18649); 5 Jul 1931, *T. P. Wang 532* (PE, no. det. 18639); *Wu & Yang 36916* (PE, no. det. 18643); *Wu & Yang 36909* (PE, no. det. 18640); *Wu & Yang 37634* (PE, no. det. 18638); *Anonymous 5087* (PE, no. det. 18630, 18631); *Anonymous 5088* (PE, no. det. 18632); *Anonymous 5325* (PE, no. det. 18634, 18633); *Anonymous 1752* (PE, no. det. 18636).

Plantae sexuales, habitu toto floribusque ad Taraxacum platypecidum Diels *valde accedentes, sed ab eo differunt foliis argutius divisis lobis lateralibus approximatis, phyllariis involucralibus exterioribus tantum (9 vel)10 ad 13(vel 14), ovato-lanceolatis vel lineari-lanceolatis, minoribus (plerumque 6.5–8.5 mm longis et 2–3 mm latis), granis pollinis aequimagnis,*

acheniis griseo-stramineis 4.5–4.9 mm longis pyramide subconica solum 0.6–0.8 mm longa.

Herbs (4–)12–20(–30) cm tall. Petiole green to purplish, often 3–6 cm, narrow, sparsely arachnoid; leaf blade mid-green, of variable shape, oblanceolate to narrowly oblanceolate, (2–)5–10(–15) × 1.5–3.5 cm, arachnoid and usually densely so, margin almost undivided and sinuate-dentate or more often deeply pinnatisect; lateral lobes (3–)5–9(–11) pairs, narrowly triangular to narrowly deltoid, ± approximate, ± patent, sometimes subrecurved, margin entire or rarely ± dentate and on distal side usually sigmoid; interlobes short, narrow; terminal lobe triangular to 3-partite, terminal segment narrowly triangular and apex acute to subobtuse. Scapes brownish green or purplish, overtopping leaves, arachnoid but lanate below capitulum. Capitulum (1–)1.5–2.5(–3.5) cm wide. Involucre 0.8–1.2 cm wide, base broadly obconic to obconic-rounded. Outer phyllaries (9 or)10–13(or 14), ± imbricate, ovate-lanceolate, narrowly lanceolate, or rarely ovate, outermost ones (5–)6.5–8.5(–10.5) × (1.3–)2–3(–3.5) mm and 3/5–4/5 as long as inner ones, ± appressed, sometimes arachnoid on abaxial surface near apex, middle part black and usually 0.7–1.1 mm wide, with a sharp transition into a broad white to whitish pink border, margin densely ciliate, apex ± flat or blackish callose. Ligules yellow, not striped or outside very faintly striped grayish; inner ligules with yellow or pinkish apical teeth; floret tube ± glabrous. Stigmas variable in color, usually yellow, dirty yellow, or greenish yellow but sometimes blackish green (within population). Anthers polliniferous; pollen grains regular in size. Achene (not fully ripe) grayish straw-colored brown, (4–)4.5–4.9 × 0.9–1 mm; body spinulose in upper ca. 1/3, subgradually narrowing into a subconic 0.6–0.8 mm cone, spinules minute and thin. Pappus white, 5–6 mm. Fl. summer. Sexual.

● Subalpine meadows; 1400–3000 m. Hebei (Xiaowutai Shan).

Taraxacum peccator is a sexual relative of agamospermous plants of the *T. platypecidum* group, probably confined to Hebei (Xiaowutai Shan). It deviates from *T. platypecidum* in the type of reproduction, deeply dissected leaves with dense approximate segments, lower number of outer phyllaries, smaller outer phyllaries, and very different achenes.

24. Taraxacum forrestii Soest, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 265. 1961.

网苞蒲公英 wang bao pu gong ying

Herbs to 10 cm tall. Petiole short, narrow; leaf blade mid-green, broadly oblanceolate, 5–6 × 1.2–2.5 cm, arachnoid, pinnatisect; lateral lobes 5 or 6 approximate pairs, narrowly triangular, ± patent, distal margin and/or interlobes with a large acute tooth or lobule, apex acute to acuminate; terminal lobe often 3-partite with segment apices acute. Scapes ± equaling leaves, arachnoid and densely so below capitulum. Capitulum 3.5–4 cm wide. Involucre 1.4–1.8 cm wide, base broadly rounded. Outer phyllaries 13–17, ± imbricate, ovate to ovate-lanceolate but innermost ones narrowly lanceolate, outermost ones 6–8(–11) × (2–)3.5–4.5 mm and ca. 1/2 as long as inner ones, appressed, median part blackish green to black, usually ± distinctly veined, border distinct, white or apically suffused pinkish, and ca. 1 mm wide, margin subglabrous to ciliate and blackish purple corniculate below apex; inner phyllaries 1.6–1.8 cm. Ligules yellow; outer ligules outside dark striped. Stigmas black. Anthers polliniferous; pollen grains irregular in size. Achene unknown. Pappus white. Fl. summer. Agamosperm.

● Alpine stony grasslands; 4200–4800 m. SE Xizang, NW Yunnan.

25. Taraxacum grypodon Dahlstedt, Acta Horti Gothob. 2: 157. 1926.

反苞蒲公英 fan bao pu gong ying

Herbs 20–30 cm tall, robust. Petiole ± pale green to purplish, narrow; leaf blade pale green, oblanceolate to narrowly oblanceolate, 12–15 × 2–2.5 cm, sparsely arachnoid, undivided or lobed; lateral lobes broadly triangular, remote, recurved-hamate; interlobes long, margin subentire or with 1–3 triangular teeth; terminal lobe elongated, apex subobtuse. Scapes brownish green, overtopping leaves, apically yellowish arachnoid. Capitulum 5–5.5 cm wide. Involucre 1.6–1.8 cm wide, base broadly rounded Outer phyllaries 20–24, ovate-lanceolate, outermost ones 13–16 × 4.5–5.5 mm and 3/5–4/5 as long as inner ones, unequal, ± patent to erect-patent, middle part greenish at base and apically blackish green, distinctly veined, border white, membranous, and ca. 0.2 mm wide but apically pink and ca. 0.5 mm wide, margin sparsely ciliate, apex blackish green, blunt, and corniculate below tip; inner phyllaries to 2 cm. Ligules yellow; outer ligules outside striped grayish; inner ligules with blackish apical teeth; floret tube sparsely puberulent. Stigmas blackish green. Anthers polliniferous; pollen grains slightly irregular in size. Achene brown, 4.5–4.8 × ca. 1.2 mm; body densely spinulose and squamulose above, ± smooth to tuberculate below, ± abruptly narrowing into a subcylindric ca. 1 mm cone; beak 8–9 mm. Pappus yellowish white, ca. 9 mm. Fl. summer. Probably sexual.

● Subalpine meadows; 3100–3300 m. Qinghai, N Sichuan.

Taraxacum grypodon was also reported from E Xizang (FRPS 80(2): 42. 1999; Higher Pl. China 11: 777. 2005), but a revision of the material is required.

As there are no ripe achenes in the authentic material of *Taraxacum grypodon*, their description is compiled on the basis of *Anonymous 8486* (PE, no. det. 22956), from Qinghai.

26. Taraxacum lanigerum Soest, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 269. 1961.

多毛蒲公英 duo mao pu gong ying

Herbs (10–)15–20 cm tall, robust. Petiole pale green to grayish purple, unwinged; leaf blade mid-green to slightly brownish green and sometimes with small dark spots, oblanceolate to ± elliptic, (5–)8–15 × 1.5–4 cm, sparsely to densely arachnoid, pinnatipartite to pinnatisect but sometimes undivided, midvein proximally brownish purple, margin dentate, teeth recurved; lateral lobes 4 or 5(–8) pairs, triangular to narrowly falcate, recurved, margin entire or on distal side with a single tooth, apex subacute with tip often elongated into a very narrow

variously pointing terminal part; interlobes short and broad, margin ± entire, dentate, or lobulate; terminal lobe triangular to narrowly triangular, margin entire or sparsely denticulate and sometimes distally with a distinct incision, apex acute to subacute, basal segments recurved to subpatent. Scapes brownish green, subequaling leaves, apically densely whitish brown arachnoid but sometimes glabrescent. Capitulum 3.5–5 cm wide. Involucre 0.7–1.2 cm wide, base broadly rounded. Outer phyllaries 17–25, blackish green to olivaceous green, ± not imbricate, lanceolate to narrowly lanceolate, outermost ones 7–13 × 3–5 mm and 2/3–4/5 as long as inner ones, loosely appressed to erect, unbordered to very narrowly paler bordered, margin sparsely to densely ciliate or subglabrous, distally often suffused brownish purple; inner phyllaries 1.3–1.7 cm. Ligules yellow; outer ligules flat, outside striped gray to grayish purple; floret tube puberulent. Stigmas blackish green. Anthers polliniferous; pollen grains regular in size. Achene variable, initially straw-colored brown, later brown, grayish brown, or almost black, 3.5–5 × 1.2–1.4 mm; body densely spinulose and squamulose above, ± smooth to tuberculate below, ± abruptly narrowing into a conic 0.4–1.1 mm cone; beak 6–10 mm. Pappus brownish dirty white, 6–7 mm. Fl. summer. Sexual.

● Subalpine to alpine meadows and grasslands; 3500–4200 m. Sichuan.

Taraxacum lanigerum was also reported from Xizang (FRPS 80(2): 40. 1999; Higher Pl. China 11: 777. 2005), but the material under this name in herbarium collections belongs to other taxa.

Taraxacum lanigerum is a variable sexual species. Some plants may be interpreted as a product of hybridization or introgression with *T. lugubre*.

27. Taraxacum lugubre Dahlstedt, Acta Horti Gothob. 2: 148. 1926.

川甘蒲公英 chuan gan pu gong ying

Herbs 10–18 cm tall, medium-sized. Petiole pale green to purple, unwinged; leaf blade vivid green with midvein pale green or proximally pinkish, narrowly oblanceolate to ± narrowly elliptic, 10–14 × 1.5–3 cm, sparsely arachnoid to ± glabrous, pinnatipartite to pinnatisect but sometimes undivided, margin remotely dentate; lateral lobes 3–5(or 6) pairs, triangular to narrowly triangular, patent to subrecurved, margin ± entire, apex subobtuse to obtuse; interlobes to 1 cm wide, margin ± entire or with a single tooth; terminal lobe triangular to helmet-shaped, margin entire, apex subacute. Scapes pale brownish green, subequaling leaves, sparsely arachnoid but sometimes apically densely arachnoid. Capitulum 3.5–4 cm wide. Involucre 1.2–1.5 cm wide, base broadly rounded to truncate. Outer phyllaries (11–)13–19, ± imbricate, ovate-lanceolate to broadly ovate, outermost ones 6–11 × 4–7 mm and 1/2–3/4 as long as inner ones, loosely appressed, venation not distinct, abaxially glabrous or sparsely arachnoid, middle part blackish green to dark green but blackish or black when dry, with a greenish white 0.1–0.3(–2.4) mm wide border or rarely unbordered, margin sparsely to densely ciliate, apex ± callose; inner phyllaries blackish green, 1.4–1.6 cm, abaxially sometimes arachnoid. Ligules yellow; outer ligules flat, 1.8–3.6 mm wide, outside striped grayish or dark gray; floret tube puberulent. Stigmas blackish. Anthers polliniferous; pollen grains regular in size. Achene variable, straw-colored brown, dark brown, grayish brown, or almost black, 3.6–5.6 × 1.5–2 mm; body spinulose above, uppermost part squamulose, abruptly narrowing into a conic 0.4–0.7(–0.9) mm cone; beak 6.5–9 mm. Pappus brownish to yellowish white, 6–7.5 mm. Fl. summer. Sexual.

● Alpine meadows and grasslands, open-ground slopes; 4000–4600 m. Sichuan.

Taraxacum lugubre was also reported from Gansu, Qinghai, and Xizang (FRPS 80(2): 40. 1999; Higher Pl. China 11: 777. 2005), but a revision of the material is required.

28. Taraxacum pseudonutans Kirschner & Štěpánek, **sp. nov.**

假垂穗蒲公英 jia chui sui pu gong ying

Type: China. Ningxia: “Haiyuan County [海原县], Jiangyang Qu,” 7 Sep 1956, *Yellow River Expedition 5240* (holotype, PE, no. det. 24853).

Paratypes: China. Gansu: “Near Mawu [马坞], Minhsien [岷县], on weedy summit,” 2600 m, 27 Jun 1938, *T. P. Wang, 4613* (PE, no. det. 24832). Ningxia: “Haiyuan County [海原县], Nanhua Mt. [南花山],” 10 Jul 1956, *Yellow River Expedition 5307* (PE, no. det. 24854); “Jingyuan County [泾源县],” 18 Jul 1956, *Yellow River Expedition 5419* (PE, no. det. 24852); “Lung-ti-kuo, in marg. viae” [probably Longde Xian 隆德县], ca. 2600 m, 5 Jul 1930, *D. Hummel, S. Hedin Expedition 3933c* (S, no. det. 23066 et no. det. 23030).

Plantae agamospermae, in comparatione Taraxaci nutantis Dahlstedt (*e* Taraxaco sect. Biennibus R. Doll) *foliis argutius regulariusve divisis, calanthidio minore ca. 4.5 cm diametro, phyllariis involucralibus exterioribus numero restricto fere 15 ad 21, brevioribus latioribusque, 1.2–1.5 cm longis et 3–4.5 mm latis, granis pollinis diametro imparibus*.

Herbs 20–40 cm tall, usually robust. Petiole ± purplish, 5–13 cm, winged; leaf blade probably light green, narrowly oblanceolate to linear-lanceolate, 10–30 × 2.5–3.5 cm, sparsely arachnoid with long hairs, undivided but margin regularly dentate or pinnatilobed; lateral lobes 3 or 4 pairs, lobulelike and broadly to narrowly triangular, to 1 cm, remote, patent, margin entire; interlobes long, broad, margin irregularly sparsely dentate; terminal lobe narrowly triangular, large, apex subacute, basal segments narrowly triangular and patent. Scapes brownish green, overtopping leaves, very densely arachnoid (almost tomentose), with thickened pale brownish hair base near capitulum. Capitulum ca. 4.5 cm wide. Involucre 1–1.2 cm wide, base flat-rounded. Outer phyllaries (13–)15–21, not imbricate, narrowly lanceolate to linear-lanceolate, 12–15 × 3–4.5 mm, ± erect, middle part dark olivaceous green and probably slightly pruinose, with gradual transition into pale green 0.3–1 mm wide border, margin remotely denticulate and long ciliate, apex blackish green corniculate; inner phyllaries 1.7–1.8 cm. Ligules light brownish orange, becoming brownish violet when dry; outer ligules outside striped dark gray; floret tube puberulent. Stigmas blackish purple, originally probably light brownish gray. Anthers polliniferous (sometimes sparsely);

pollen grains irregular in size. Achene (only not fully ripe ones available) light brown, 4.7–5 × 1.2–1.6 mm; body ± densely spinulose and squamulose above, spinules short, obtuse, and ± tuberculate to smooth below, ± subgradually narrowing into a conic 0.7–1 mm cone; beak probably long. Pappus dirty white. Fl. summer. Agamosperm.

● Mountain grasslands, pastures, along paths; 2300–2800 m. S Gansu, Ningxia.

6. Taraxacum sect. **Tibetana** Soest, Wentia 10: 41. 1963.

西藏蒲公英组 xi zang pu gong ying zu

Plants usually small, delicate. Petiole ± unwinged; leaf blade usually with recurved lateral segments, their distal margin often sigmoid. Outer phyllaries (5–)9–13(–22), black or black green, not imbricate or ± imbricate, ovate-lanceolate, lanceolate, or sometimes linear-lanceolate, appressed, unbordered or less often with a pale border, apex flat or callose. Stigmas usually black or blackish green, rarely yellow. Achene usually 4–5.5 × (1–)1.2–1.4 mm; body most often densely shortly spinulose or squamulose above, sometimes with longer erect spinules, gradually to subabruptly narrowing into a conic to thickly subcylindric 0.6–1.7 mm cone; beak 5–10 mm. Pappus white or yellowish, 5–8 mm. Sexual or agamospermous.

About 25 species: highest diversity in S Xizang, N Yunnan, and W Sichuan; 17 species (15 endemic) in China.

In China this section contains sexual species with wider variation ranges (i.e., *Taraxacum apargiiforme* and *T. eriopodum*) and an array of agamospermous species, which are usually known from only rather scanty material.

1a. Pollen absent.
2a. Stigmas yellow ..... 32. *T. atrocarpum*
2b. Stigmas blackish to dark grayish green.
3a. Outer phyllaries unbordered ..... 31. *T. suberiopodum*
3b. Outer phyllaries with a distinct whitish or whitish green 0.2–0.7 mm wide border.
4a. Outer phyllaries 19–22, border 0.5–0.7 mm wide ..... 42. *T. delicatum*
4b. Outer phyllaries 10 or 11, border ca. 0.2 mm wide ..... 43. *T. centrasiaticum*
1b. Pollen present.
5a. Pollen grains regular in size.
6a. Outer phyllaries 15–18; involucre base broadly rounded; achene cone 1–1.5 mm ..... 29. *T. eriopodum*
6b. Outer phyllaries 11–13; involucre base obconic; achene cone 0.6–0.7 mm ..... 37. *T. apargiiforme*
5b. Pollen grains irregular in size.
7a. Stigmas yellow ..... 33. *T. mutatum*
7b. Stigmas blackish to dark grayish green.
8a. Outer phyllaries with a distinct whitish border.
9a. Leaf lateral lobes in 5–9 pairs; outer phyllaries not imbricate ..... 35. *T. subcoronatum*
9b. Leaf lateral lobes in 2–4 pairs; outer phyllaries ± imbricate.
10a. Outer phyllary border 0.3–0.4 mm wide; leaf lateral lobes not remote ..... 40. *T. chionophilum*
10b. Outer phyllary border ca. 0.2 mm wide; leaf lateral lobes remote ..... 43. *T. centrasiaticum*
8b. Outer phyllaries unbordered or with an indistinct paler border to 0.1 mm wide.
11a. Outer phyllaries usually 7–9 mm ..... 30. *T. tibetanum*
11b. Outer phyllaries usually 4–7 mm.
12a. Outer phyllaries densely ciliate.
13a. Achene dark grayish olivaceous, light straw-colored brown when unripe; cone conic ..... 39. *T. apargia*
13b. Achene reddish brown to dark reddish brown, ochraceous reddish when unripe; cone cylindric to subcylindric.
14a. Achene 3.9–4.2 mm ..... 44. *T. austrotibetanum*
14b. Achene 4.3–5.1 mm ..... 45. *T. suavissimum*
12b. Outer phyllaries ± glabrous or very sparsely ciliate.
15a. Leaves undivided but margin sometimes remotely minutely denticulate ..... 41. *T. staticifolium*
15b. Leaves pinnatilobed, pinnatisect, or at least lobulate.
16a. Outer phyllaries 5–9; involucre 5–7 mm wide; leaf terminal lobe elongated ..... 38. *T. mastigophyllum*
16b. Outer phyllaries 10–14; involucre 8–10 mm wide; leaf terminal lobe not elongated.
17a. Ligules deep yellow; outer phyllaries 2–3 mm wide ..... 34. *T. przevalskii*
17b. Ligules pale yellow; outer phyllaries 1.5–2.2 mm wide ..... 36. *T. roseoflavescens*

29. Taraxacum eriopodum (D. Don) Candolle, Prodr. 7: 147. 1838.

毛柄蒲公英 mao bing pu gong ying

Leontodon eriopodus D. Don, Mem. Wern. Nat. Hist. Soc. 3: 413. 1821 [*"eriopodum"*].

Herbs 6–13(–20) cm tall, usually small, base whitish to brownish arachnoid. Petiole green, unwinged; leaf blade mid-green to bright green, oblanceolate to broadly oblanceolate, 8–10(–12) × 1.5–2.5 cm, whitish brown arachnoid on outer leaves but ± subglabrous on middle ones, usually lobed or rarely undivided; lateral lobes (when present) 3 or 4 short to moderately long pairs, to 1 × 1 cm, ± patent to recurved, distal margin minutely dentate, apex obtuse; interlobes broad, margin ± entire; terminal lobe rounded-obtuse, 1.5–3 cm, usually broader than lateral lobes, margin entire. Scapes brownish green, ± overtopping leaves, brownish arachnoid. Capitulum 2.5–3.5 cm wide. Involucre 1.1–1.4 cm wide, base broadly rounded. Outer phyllaries 15–18, blackish green and suffused red (black when dry), subimbricate, ± lanceolate, outermost ones (5.5–)6.5–7.5 × 2–2.5(–3) mm and ca. 1/2 as long as inner ones, appressed to erect, without a paler border, flat to minutely corniculate below apex; inner phyllaries 1.2–1.4 cm, flat to corniculate near apex. Ligules yellow, flat; outer ligules outside striped greenish gray; inner ligules with gray or pink apical teeth. Stigmas dark (black when dry). Anthers polliniferous; pollen grains regular in size. Achene deep red or pale straw-colored brown, 4.5–5 × 1.1–1.3 mm; body ± densely spinulose above, ± gradually narrowing into a conic (1–)1.2–1.4(–1.5) mm cone with thick base, spinules conic, short, and acute; beak ca. 6 mm, not thin. Pappus yellowish, 6–6.5 mm. Fl. late summer or autumn. Sexual.

Mountain pastures, along paths, grassy slopes; 2000–4500 m. Xizang, NW Yunnan [Bhutan, India, Nepal].

For the explanation of the authorship and nomenclature, see Kirschner and Štěpánek (Edinburgh J. Bot. 53: 217–219. 1996). Reports of *Taraxacum eriopodum* from Qinghai and Sichuan (FRPS 80(2): 55. 1999; Higher Pl. China 11: 782. 2005) require additional study.

30. Taraxacum tibetanum Handel-Mazzetti, Monogr. Taraxacum, 67. 1907.

藏蒲公英 zang pu gong ying

Herbs 5–15(–20) cm tall. Petiole ± green or purplish, base sparsely arachnoid; leaf blade mid-green to deep green, narrowly oblong-lanceolate in outline, 4–10(–13) × 0.8–1.2(–1.6) cm, glabrous, pinnatilobed to pinnatisect; lateral lobes 2–4 pairs, broadly triangular with base convex on distal side, approximate, ± recurved, distal margin entire, dentate, or sparsely lobulate, apex narrowed into a ± subpatent to strongly recurved lobulelike segment; interlobes short, broad; terminal lobe ± narrowly triangular-sagittate, margin entire or sparsely denticulate, apex subobtuse. Scapes brownish green, ± overtopping leaves, subglabrous and only sparsely arachnoid below capitulum. Capitulum ca. 4 cm wide. Involucre 1.1–1.4 cm wide, base broadly rounded. Outer phyllaries 10–13, ± black, subimbricate, oblong-ovate (often widest above middle), outermost ones (4–)7–9 × 2.7–3.1 mm and 1/2–3/4 as long as inner ones, venation not distinct, unbordered, ± glabrous to sparsely ciliate, ± flat to minutely corniculate below apex; inner phyllaries blackish green, 13–16 × 2–2.5 mm, apex ± flat or callose. Ligules yellow, outside striped dark gray; inner ligules with blackish apical teeth. Stigmas ± black. Anthers polliniferous; pollen grains irregular in size. Achene dark grayish brown, 4.1–4.4 × 1.1–1.4 mm; body distally subsparsely spinulose, ± smooth below, ± subabruptly narrowing into a 0.6–0.9 mm cone broadly conic at base and subconic distally, spinules small, suberect, and acute; beak ca. 6 mm. Pappus yellowish white, 7–8 mm. Fl. summer. Agamosperm.

Alpine grasslands and pastures; 3800–5000 m. Sichuan, Xizang [India (Sikkim)].

Records of *Taraxacum tibetanum* from Qinghai and Yunnan (FRPS 80(2): 55. 1999; Higher Pl. China 11: 782. 2005) should be re-examined. The species was reported from W China and Bhutan (Soest, Wentia 10: 51. 1963), but material is outside the limits of *T. tibetanum*. The description is compiled on the basis of the lectotype (*J. D. Hooker s.n.*; K, no. det. 8781; a flowering capitulum of the lectotype specimen is depicted in Handel-Mazzetti, Monogr. Taraxacum, pl. II. 1907), the K and BM syntypes fully corresponding to the lectotype, and *H. Smith 10711:1* (PRA, UPS). The description of fruit is based on the latter specimen; achene description in the protologue was prepared using another original syntype (*J.-A. Soulié 574*, K) not conspecific with the lectotype and is disregarded here.

31. Taraxacum suberiopodum Soest, Acta Bot. Neerl. 19: 28. 1970.

滇北蒲公英 dian bei pu gong ying

Herbs 12–20 cm tall. Petiole pinkish, narrow to narrowly winged; leaf blade narrowly oblanceolate, 10–18 × 1.5–3.5 cm, ± glabrous, undivided and remotely lobulate to pinnatilobed; lateral lobes usually in 3 or 4 pairs, remote, to 1.2 cm, from a broad flat triangular base abruptly narrowed into lingulate lobule, recurved, often reduced to patent lobules; interlobes long, to 1.5 cm wide, margin entire or distal margin with 1 or 2 teeth; terminal lobe ± elongated triangular, 3–5 cm. Scapes brownish green, ± equaling leaves, subglabrous at base but densely whitish brown arachnoid below capitulum. Capitulum 2.5–3 cm wide. Involucre broadly rounded, 1–1.2 cm wide. Outer phyllaries 11–15, brownish green, ± not imbricate, ovate-lanceolate, outermost ones 5.5–6 × 2.5–3 mm and 1/3–1/2 as long as inner ones, loosely appressed, venation not distinct, unbordered, margin sparsely ciliate, flat below apex; inner phyllaries to 1.4 cm. Ligules yellow; outer ligules flat and outside striped grayish purple; inner ligules with long blackish purple teeth. Stigmas ± black. Anthers without pollen (so far as it can be observed in late blossom). Achene straw-colored brown, 5–5.5 mm; body apically densely spinulose, subabruptly narrowing into a subconic 1–1.3 mm cone, spinules short; beak ca. 1 cm. Pappus dirty white, ca. 7 mm. Fl. summer. Agamosperm.

● Mountain calcareous shrubby slopes; 3100–3400 m. NW Yunnan.

Taraxacum suberiopodum is known from the type material only.

32. Taraxacum atrocarpum Kirschner & Štěpánek, **sp. nov.**

黑果蒲公英 hei guo pu gong ying

Type: China. Yunnan: "South end of Zhongdian [中甸]

Plateau, ca. 45 km S of Zhongdian," 3200 m, Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4039 (holotype, PRA; isotypes, PRA).

Paratype: China. Yunnan: *ibidem*, *A. J. Richards s.n.*, cultivated as JK 4040 (PRA).

Plantae agamospermae phyllariis involucralibus imbricatis numerosis, anguste ovatis usque anguste lanceolatis, arcte adpressis, pallide marginatis ciliatis ecorniculatis, ligulis luteis, stigmatibus luteis, antheris polline carentibus, acheniis nigricantibus crassis, corpore superne dense squamuloso, in pyramidem crassam 1.2–1.4 mm longam subabrupte transiente.

Herbs 10–18 cm tall. Petiole greenish or pink, narrow, sparsely arachnoid; leaf blade mid-green, narrowly oblong-oblanceolate, 5–11 × 1–2 cm, sparsely arachnoid, pinnatisect; lateral lobes 3–5 pairs, narrowly triangular, ± patent to subrecurved, proximal margin concave and entire, distal margin sigmoid or straight and often with 1–3 teeth, apex subacute; interlobes narrow, margin entire or denticulate; terminal lobe narrowly triangular, elongated. Scapes ± overtopping leaves, sparsely arachnoid. Capitulum 3–3.5 cm wide. Involucre 1–1.1 cm wide, base rounded. Outer phyllaries 15–19, blackish green, imbricate, narrowly ovate to narrowly lanceolate, often from an ovate basal part abruptly narrowing into a narrow apical part, outermost ones 4.5–7.5(–8.5) × 2.2–3 mm and ca. 2/5 as long as inner ones, appressed, dark middle part with a ± gradual transition into greenish white 0.3–0.7 mm wide border, margin ciliate, ± flat below apex; inner phyllaries 1.3–1.5 cm, apex flat. Ligules yellow; outer ligules ± flat, outside striped gray purplish; inner ligules with purplish apical teeth. Stigmas yellow. Anthers without pollen. Achene dark gray to blackish but straw-colored when unripe, 4.1–4.4 × 1.2–1.3 mm; body apically with ± dense squamules, subabruptly narrowing into a ± cylindric 1.2–1.4 × ca. 0.4 mm cone; beak 6–7 mm. Pappus yellowish white, 5–6 mm. Fl. summer. Agamosperm.

● Alpine meadows; ca. 3200 m. NW Yunnan.

Taraxacum atrocarpum is characterized by yellow stigmas, male sterility, and thick blackish achenes. The other known species without pollen in the section are *T. suberiopodum* and *T. delicatum*. The former has large (5–5.5 mm) achenes, beak ca. 1 cm, and black stigmas. The latter has more numerous outer phyllaries and black stigmas. *Taraxacum centrasiaticum*, in which the presence of pollen remains unknown, has only 10 or 11 outer phyllaries with glabrous margin, stigmas blackish green, and achenes with a short (0.7–0.8 mm) cone.

33. Taraxacum mutatum Kirschner & Štěpánek, **sp. nov.**

变化蒲公英 bian hua pu gong ying

Type: China. Yunnan: "Northern part of Zhongdian [中甸] Plateau, Napa Hai [纳帕海], road out of the plateau," 3400–3750 m, Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4066 (holotype, PRA; isotypes, PRA).

Paratypes: China. Yunnan: *ibidem*, *A. J. Richards s.n.*, cultivated as JK 4065 (PRA); "South end of Zhongdian [中甸] Plateau, ca. 45 km S of Zhongdian," 3200 m, Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4049 (PRA).

Plantae agamospermae foliis pinnatilobis vel pinnatisectis, lobis lateralibus late linearibus rectis patentibus, phyllariis involucralibus exterioribus paucis, lanceolatis usque linearilanceolatis, pallide viridibus usque atro-viridibus, pruinosis, stigmatibus luteis, acheniis subatris, magnis, sensim in pyramidem longam subcylindricam abeuntibus.

Herbs 12–20 cm tall. Petiole ± greenish, narrow, sparsely arachnoid; leaf blade light green to mid-green, linear-oblanceolate, 6–16 × 0.8–2 cm, sparsely arachnoid, pinnatilobed to pinnatisect; lateral lobes 3–6 pairs, ± linear-triangular to broadly linear, patent, margin entire or with a single tooth or lobule near base on distal side; interlobes 2–4 mm wide, with 1 or 2 teeth or lobules; terminal lobe narrowly triangular-lingulate, margin often with 1–3 patent teeth or segments, basal segments linear. Scapes greenish, overtopping leaves, sparsely arachnoid but sometimes subglabrous even below capitulum. Capitulum 2.5–3.5 cm wide. Involucre ± pruinose, 0.9–1.1 cm wide, base rounded. Outer phyllaries 9–11(–13), light green to blackish green and grayish pruinose, slightly imbricate, lanceolate to linear-lanceolate, outermost ones 4.5–6.5(–8) × (1.6–)1.9–2.3 mm and ca. 1/2 as long as inner ones, ± appressed to loosely so, with an evident whitish 0.2–0.3 mm wide border, margin ciliate, apex flat; inner phyllaries 1.2–1.5 cm, apex flat. Ligules yellow; outer ligules ± flat, outside striped grayish pink; inner ligules with reddish apical teeth. Stigmas yellow, sometimes with a few darker hairs. Anthers polliniferous; pollen grains irregular in size. Achene dark gray to blackish but straw-colored when unripe, 4.9–5.3 × 1–1.1 mm; body spinulose-squamulose in upper 1/2–2/3, ± gradually narrowing into a subcylindric 1.4–1.7 × ca. 0.3 mm cone; beak ca. 7 mm. Pappus yellowish white, 5–6 mm. Fl. summer. Agamosperm.

● Alpine meadows, grazed alpine grasslands; 3400–3800 m. NW Yunnan.

Taraxacum mutatum is characterized by outer phyllaries pruinose, not numerous, of narrow shape, and ciliate; stigmas yellow; leaves with straight and patent lateral lobes; and achenes large, squamulose, almost black, and with body gradually narrowing into an unusually long cone. Similar agamospermous polliniferous species of *T.* sect. *Tibetana* to be compared with *T. mutatum* are *T. tibetanum* (stigmas black, cone conic and to 0.9 mm), *T. przevalskii* (stigmas blackish, cone 0.4–0.6 mm), *T. subcoronatum* (achene body abruptly narrowing into cone), *T. apargia* (stigmas black, smaller achenes with cone to 0.9 mm), *T. centrasiaticum* (stigmas blackish green, small achenes, cone ca. 0.9 mm), and *T. suavissimum* (achenes dark reddish brown).

34. Taraxacum przevalskii Tzvelev, Novosti Sist. Vyssh. Rast. 24: 218. 1987.

藏北蒲公英 zang bei pu gong ying

Herbs 5–15 cm tall, subglabrous at base. Petiole purplish at base, narrow; leaf blade mid-green, narrowly oblanceolate, 4–10 × 0.8–1.5 cm, glabrous, shallowly to deeply lobed; lateral lobes 3 or 4 pairs, ± narrowly triangular, recurved, margin entire and on distal side often concave, apex elongated and subacute; terminal lobe triangular, often elongated with subpatent basal segments. Scapes brownish green, ± equaling leaves, glabrous. Capitulum 2–3 cm wide. Involucre blackish, 8–10 mm wide, base ± rounded. Outer phyllaries 10–12, blackish and slightly pruinose, subimbricate, ovate-lanceolate, outermost ones 4–6 × 2–3 mm and 1/5–1/3 as long as inner ones,

appressed, paler border absent, margin glabrous, apex ± flat; inner phyllaries blackish green, 1–1.3 cm. Ligules yellow; outer ligules flat, outside striped pale grayish. Stigmas blackish. Anthers polliniferous; pollen grains irregular in size. Achene (when unripe) brownish, 4–5 mm; body apically distinctly spinulose, subgradually narrowing into a 0.4–0.6 mm cone. Pappus white, ca. 6 mm. Fl. summer. Agamosperm.

● Alpine slopes; ca. 5000 m. Xizang.

Taraxacum przevalskii is known from the type specimens only.

35. Taraxacum subcoronatum Tzvelev, Novosti Sist. Vyssh. Rast. 24: 218. 1987.

亚冠蒲公英 ya guan pu gong ying

Herbs 8–20 cm tall, brownish hairy at base. Petiole purple, narrow; leaf blade mid-green, narrowly oblanceolate, 4–7 × 0.8–1 cm, sparsely arachnoid, shallowly to deeply lobed; lateral lobes 5–9 pairs, ± triangular-deltoid, ± patent to recurved, margin entire, apex acute; terminal lobe triangular, often elongated. Scapes ± overtopping leaves, base purple, apically brownish white arachnoid. Capitulum 2–3 cm wide. Involucre blackish green, 8–10 mm wide, base ± rounded. Outer phyllaries 11–16, blackish green, not imbricate, narrowly triangular to narrowly lanceolate, usually widest in middle, outermost ones 6–8 × 1.8–2.5 mm and ca. 1/2 as long as inner ones, appressed, with a whitish 0.1–0.2 mm wide border, margin almost not ciliate, apex whitish and ± flat; inner phyllaries blackish green, 1.3–1.5 cm. Ligules pale yellow; outer ligules flat, outside striped grayish pink. Stigmas blackish. Anthers polliniferous; pollen grains irregular in size. Achene (when unripe) pale brownish, 4–5 mm; body apically spinulose, abruptly narrowing into a cone. Pappus white, ca. 6 mm. Fl. summer. Agamosperm.

● Alpine slopes along rivers; ca. 4500 m. Qinghai or N Xizang.

Taraxacum subcoronatum is known from the type specimen only, and it is uncertain if this collection is from N Xizang or Qinghai, although FRPS (80(2): 74. 1999) gives the locality as N Xizang.

36. Taraxacum roseoflavescens Tzvelev, Novosti Sist. Vyssh. Rast. 24: 217. 1987.

二色蒲公英 er se pu gong ying

Herbs 5–12 cm tall, slender. Petiole pink or pale green, narrow; leaf blade mid-green, linear-oblanceolate, usually 5–7 × 0.6–0.9 cm, subglabrous, margin subentire to shallowly lobed; lateral segments in 3 or 4 pairs, recurved, distal margin sinuate and downward pointing; terminal lobe often elongated. Scapes pale brownish green, slightly overtopping or equaling leaves, subglabrous or arachnoid below capitulum. Capitulum 2–3 cm wide. Involucre blackish, 8–10 mm wide, base rounded. Outer phyllaries 10–14, blackish green, ± not imbricate, lanceolate to narrowly lanceolate, outermost ones 5–6 × 1.5–2.2 mm and 2/5–1/2 as long as inner ones, appressed, ± glabrous, paler border absent, apex flat or corniculate; inner phyllaries blackish green, 1.2–1.4 cm. Ligules pale yellow; outer ligules flat, outside striped (grayish) pink; inner ligules with blackish red 0.5–1 mm teeth. Stigmas dark greenish. Anthers polliniferous; pollen grains irregular in size. Achene (only unripe available) spinulose apically. Pappus white, ca. 6 mm. Fl. summer. Agamosperm.

● Moist places, near streams; ca. 4300 m. Qinghai.

Taraxacum roseoflavescens is known from the type specimens only.

37. Taraxacum apargiiforme Dahlstedt, Acta Horti Gothob. 2: 178. 1926.

天全蒲公英 tian quan pu gong ying

Type: China. Sichuan: “Sze-ch’uan bor.-occid.: Tsipula, fjälläng i passet,” ca. 4000 m, 5 Aug 1922, *H. Smith, Pl. Sin. 4173* (**lectotype, designated here**, UPS; isolectotype, S).

Taraxacum apargiiforme f. *integrifolium* Dahlstedt.

Herbs to 15 cm tall, slender. Petiole pale green or purplish, narrow; leaf blade narrowly oblanceolate, ± glabrous, margin undivided and remotely dentate or pinnatisect; lateral lobes in 4 or 5 pairs, approximate, ± recurved, distal margin sigmoid, apex with an elongated tip; interlobes short, margin entire; terminal lobe ± triangular, with a lingulate tip. Scapes brownish green, overtopping leaves, glabrous. Capitulum ca. 3 cm wide. Involucre obconic, 5–7 mm wide. Outer phyllaries 11–13, blackish green, ± not imbricate, ovate to lanceolate, outermost ones 4.2–6.5 × 1.3–2 mm and 1/3–1/2 as long as inner ones, loosely appressed, venation not visible, unbordered, margin whitish ciliate, flat below apex; inner phyllaries 1–1.1 cm. Ligules (?pale) yellow; outer ligules flat and striped pinkish outside; inner ligules with blackish purple teeth. Stigmas black. Anthers polliniferous; pollen grains regular in size. Achene (mature unknown) probably straw-colored brown, ca. 4 mm, apically sparsely spinulose and subabruptly narrowing into a conic 0.6–0.7 mm cone; beak at least 5 mm. Pappus white, ca. 5 mm. Fl. summer. Sexual.

● Alpine meadows; ca. 4000 m. Sichuan.

Reports of *Taraxacum apargiiforme* from Xizang (FRPS 80(2): 60. 1999; Higher Pl. China 11: 783. 2005) are uncertain.

The original material of *Taraxacum apargiiforme* listed by Dahlstedt in the protologue is not homogeneous, and we exclude *H. Smith 4196*. The figure of the achene in Dahlstedt (loc. cit.: pl. III: 21) is excluded as *H. Smith 4196* does not belong to this species and is agamospermous, and the figure is based on a damaged immature achene. Dahlstedt also mistakenly listed *H. Smith 4171*, not at all present in the original material (he himself gave the correct number, *H. Smith 4173*, in the caption to fig. 14, c, d).

38. Taraxacum mastigophyllum Kirschner & Štěpánek, **sp. nov.**

剑叶蒲公英 jian ye pu gong ying

Type: China. Sichuan: “Sikang [西康], Kangting [康定] (Tachienlu) distr., Tapaoshan, east range,” 4100 m, 24 Aug 1934, *H. Smith 11547* (holotype, UPS).

Paratypes: China. Sichuan: *H. Smith 11243* (UPS); *H. Smith 10711:3* (UPS).

Plantae graciles, foliis angustis lobo terminali elongato, scapis glabris, involucris aterrimis paucisquamosis glaberrimis, ligulis apice conspicue dentatis, stigmatibus atris, an-

theris polliniferis polline irregulari, acheniis obscure griseo-brunneis, magnis, grosse spinulosis.

Herbs 7–14 cm tall. Petiole long, narrow; leaf blade mid-green, linear-oblanceolate, 6–9(–12) × 0.5–0.9(–1.1) cm, ± glabrous, margin remotely lobulate or shallowly lobed; lateral segments in 1 or 2(or 3) pairs, subpatent to recurved; terminal lobe elongated, apex subobtuse. Scapes pale brownish green, slightly overtopping leaves, glabrous. Capitulum 3–3.5 cm wide. Involucre blackish, 5–7 mm wide, base narrowly rounded to slightly obconic. Outer phyllaries 5–9, black but often with a reddish apex, subimbricate, ovate-lanceolate to narrowly lanceolate, outermost ones 4.2–6 × 1.8–2.6 mm and 1/3–2/5 as long as inner ones, ± appressed, glabrous, paler border absent, apex flat; inner phyllaries blackish, 1.1–1.4 cm. Ligules (?pale) yellow; outer ligules flat, outside striped grayish pink; inner ligules with (probably) dark blackish 0.5–1 mm teeth. Stigmas blackish. Anthers polliniferous; pollen grains irregular in size. Achene dark brownish gray but reddish ochraceous when unripe, 5.2–5.3 × 1.1–1.2 mm; body subsparsely spinulose and sometimes also apically squamulose, apically subabruptly narrowing into a conic 0.7–0.8 mm cone, spinules subsparse, to 0.7 mm, thin, erect, and acute; beak (when unripe) more than 4 mm. Pappus white, 5.5–6.5 mm. Fl. late summer. Agamosperm.

● Alpine meadows; 4100–4500 m. W Sichuan.

Among members of this section, *Taraxacum mastigophyllum* is distinct in having glabrous scapes and leaves, outer phyllaries very few and glabrous (not ciliate), leaves narrow with an elongated terminal lobe (the leaf shape resembles a common one in *T.* sect. *Emodensia*), and achenes with unusually long sparse spinules above.

39. Taraxacum apargia Kirschner & Štěpánek, **sp. nov.**

四川蒲公英 si chuan pu gong ying

Type: China. Sichuan: “Sikang [西康], Kangting [康定] (Tachienlu) distr., Yülingkong, Gomba-La, in prato herboso futicoso,” 3700 m, 22 Jul 1934, *H. Smith 11950* (holotype, UPS; isotype, PRA).

Paratypes: China. Sichuan: *H. Smith 12508* (CAS, PRA, UPS); *H. Smith 11561* (UPS).

Plantae phyllariis involucralibus numerosis, subimbricatis, atro-viridibus, marginibus ciliatis, apicibus ecorniculatis, involucro basi rotundato, ligulis apice distincte denticulatis, stigmatibus aterrimis, polline irregulari, acheniis saturate griseo-olivaceis, pyramide conica brevi insignes.

Herbs 12–21 cm tall. Petiole purplish, narrow; leaf blade mid-green, narrowly oblanceolate, 9–12 × 1.3–2(–2.5) cm, abaxially glabrous or sparsely hairy on midvein, margin subentire to deeply lobed; lateral lobes 3–6 pairs, narrowly triangular, ± patent to recurved, margin entire or on distal side with 1 tooth, apex acute; terminal lobe triangular-sagittate. Scapes ± overtopping leaves, apically sparsely arachnoid. Capitulum 3–4.5 cm wide. Involucre blackish, 8–10 mm wide, base rounded. Outer phyllaries 11–15(–17), blackish green, subimbricate, narrowly lanceolate, outermost ones 4.3–7.5 × 1.3–1.8 mm and 1/3–1/5 as long as inner ones, appressed to recurved at apex, border paler and less than 0.1 mm wide, margin ciliate to densely ciliate; inner phyllaries blackish, 1.1–1.4 cm. Ligules (?pale) yellow; outer ligules flat, outside striped greenish pink; inner ligules with dark blackish 0.5–0.7 mm teeth. Stigmas black. Anthers polliniferous; pollen grains irregular in size. Achene dark grayish olivaceous but straw-colored when unripe, 4.2–4.5 × 1–1.2 mm; body apically with distinct erect spinules and squamules, subgradually narrowing into a conic 0.7–0.9 mm cone; beak 6–6.5 mm. Pappus slightly yellowish white, 5–6 mm. Fl. summer. Agamosperm.

● Alpine meadows; 3700–4200 m. W Sichuan.

Taraxacum apargia is similar to *T. apargiiforme* but differs in having involucre rounded at base, outer phyllaries usually with a very narrow paler border, achenes ± densely covered with distinct spinules and squamules above, pollen irregular, and agamospermous reproduction.

40. Taraxacum chionophilum Dahlstedt, Acta Horti Gothob. 2: 177. 1926.

川西蒲公英 chuan xi pu gong ying

Herbs 7–9 cm tall, delicate. Petiole greenish or pinkish, narrow; leaf blade deep green, oblanceolate, 2.5–5 × 1–1.5 cm, subglabrous, margin shallowly pinnatilobed; lateral lobes 3 or 4 pairs, narrowly triangular, ca. 5 mm, approximate, patent, distal margin entire or with 1 minute tooth; interlobes short, margin sometimes with 1 tooth or lobule; terminal lobe ± broadly triangular. Scapes slightly overtopping leaves, densely arachnoid below capitulum. Capitulum 2–3 cm wide. Involucre ± blackish green, 5–7 mm wide, base narrowly rounded. Outer phyllaries 9–13, ± black, linear-lanceolate to narrowly lanceolate, outermost ones 4.8–5.8(–8) × 1.3–1.8 mm, unequal, and ca. 1/3(–2/3) as long as inner ones, appressed to apically recurved, with a whitish indistinct border becoming pinkish and 0.3–0.4 mm wide near apex, margin densely long ciliate, apex flat and not corniculate; inner phyllaries blackish green, 1.1–1.3 cm. Ligules (?pale) yellow; outer ligules flat, outside faintly striped greenish pink; inner ligules with yellowish apical teeth. Stigmas black. Anthers polliniferous; pollen grains irregular in size. Achene unknown. Agamosperm.

● Subnival places; ca. 4600 m. NW Sichuan.

The scarcity of material (absence of achenes and broad white border to outer phyllaries) make the position of *Taraxacum chionophilum* in *T.* sect. *Tibetana* rather uncertain.

41. Taraxacum staticifolium Soest, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 272. 1961.

柳叶蒲公英 liu ye pu gong ying

Herbs ca. 12 cm tall, slender. Petiole pale green to pinkish, narrow; leaf blade mid-green, linear-oblanceolate, 4–6 × 0.5–0.6 cm, ± glabrous, margin ± entire but sometimes remotely minutely denticulate, apex subobtuse. Scapes pale green, overtopping leaves, arachnoid below capitulum. Capitulum ca. 2.5 cm wide. Involucre blackish green, ca. 7 mm wide, base ± rounded. Outer phyllaries 9 or 10, ± black, ± not imbricate, lanceolate to narrowly lanceolate, outermost ones 4–6 × ca. 1.2 mm and 1/3–1/2 as long as inner ones, ± loosely appressed, paler border absent, margin sparsely ciliate, apex flat; inner phyllaries blackish, ca. 1 cm. Ligules yellow; outer ligules flat, outside striped dark gray-purple. Stigmas dark green to blackish.

Anthers polliniferous; pollen grains irregular in size. Achene unknown. Fl. summer. Agamosperm.

● Wet alpine sites; ca. 4200 m. S Xizang (Gyangzê).

Taraxacum staticifolium is known from a single type plant, which was mistakenly reported to have pollen absent.

42. Taraxacum delicatum Kirschner & Štěpánek, **sp. nov.**

柔弱蒲公英 rou ruo pu gong ying

Type: China. Gansu: "Kung-tze-tagga in valle Zaluk," ca. 3000 m, 20 Jul 1930, *D. Hummel, Exped. S. Hedin 4191* (holotype, S; isotype, S).

Paratypes: China. Qinghai: "Tongde Xian [同德县]. Longmuer Xiuma, between Jungong (Gyumgo) and Hebei on the N side of the Huang He," 3650 m, 22 Jul 1993, *Ho Ting-nung*, *B. Bartholomew & M. Gilbert 174* (CAS, PE, duplicate at HNWP not seen).

Plantae agamospermae delicatae, subtunicatae, foliis profunde pinnatisectis vel pinnatipartitis, lobis lateralibus angustis, patentibus, sigmoideis, subintegris, petiolis purpureis angustis, scapis dense araneosis, phyllariis involucralibus exterioribus numerosis, lanceolatis vel lineari-lanceolatis, laxe adpressis, planis, conspicue albido-marginatis, ligulis luteis, stigmatibus aterrimis, antheris polline carentibus, acheniis superne dense spinulosis, in pyramidem subconicam 0.6–0.8 mm longam subabrupte abeuntibus.

Herbs 10–15 cm tall, base with remnants of old petioles. Petiole purplish, narrow; leaf blade light green, ± oblanceolate, 7–11 × 1.5–2.5 cm, ± sparsely hairy on both surfaces, deeply pinnatisect; lateral lobes in (5 or)6 or 7 pairs, narrowly triangular, 8–19 × 1.2–1.8 mm, ± patent, distal margin entire or with a single tooth at lobe base and straight or ± sigmoid with apical part bent upward; lower lobes often slightly recurved, proximal margin entire and straight; interlobes usually 2–3 × ca. 5 mm, margin ± entire; terminal lobe 1–1.8 × 0.8–1.7 cm, 3-partite, basal segments narrowly lingulate, to 7 mm, and patent, apical segment narrowly lingulate, to 2 mm wide, and apex subacute. Scapes ± equaling leaves, ± densely arachnoid. Capitulum 3.5–4 cm wide. Involucre 0.9–1.1 cm wide, base rounded. Outer phyllaries usually 19–22, ± not imbricate, lanceolate to linear-lanceolate, outermost ones (5–)7–9 × (1.5–)2–3 mm and 2/5–1/2 as long as inner ones, ± loosely appressed, middle part conspicuously colored dark blackish olivaceous and ca. 1 mm wide, with a distinct whitish green 0.5–0.7 mm wide border, margin ± densely ciliate, apex ± flat; inner phyllaries 1.1–1.5 cm, apex flat. Ligules yellow; outer ligules ± flat, outside distally striped grayish pink; inner ligules with dark blackish apical teeth. Stigmas ± black. Anthers without pollen. Achene (only unripe available) pale grayish brown (probably later becoming darker or almost blackish), 4–4.5 mm; body densely spinulose above, subabruptly narrowing into ± subconic 0.6–0.8 mm cone; beak 6–7 mm. Pappus yellowish white, 5–6 mm. Fl. summer. Agamosperm.

● Alpine meadows; 3000–3700 m. Gansu, E Qinghai (Tongde).

43. Taraxacum centrasiaticum D. T. Zhai & C. H. An, J. Aug. 1st Agric. Coll. 18(3): 4. 1995.

中亚蒲公英 zhong ya pu gong ying

Herbs 12–22 cm tall. Petiole usually suffused purplish, long, unwinged; leaf blade deep green, ± linear to linear-oblanceolate, 8–14 × 0.7–2 cm, glabrous, usually deeply divided to midvein; lateral lobes 2–4 pairs, linear to rarely linear-triangular, 5–9 × 1.8–2.5 mm, remote, recurved or ± patent, margin entire; interlobes long, 1.1–1.5(–5) mm wide, margin entire; terminal lobe ± 3-partite, basal segments ± recurved, terminal segment elongated, 3–6 mm wide, and margin entire. Scapes brownish green and often suffused purplish, much overtopping leaves, sparsely arachnoid to subglabrous. Capitulum 1.5–2 cm wide. Involucre 5.5–9 mm wide, base ± rounded to slightly subobconic. Outer phyllaries 10 or 11, blackish green, ± imbricate, narrowly lanceolate to ovate-lanceolate, outermost ones 4.6–6 × 1.3–2 mm and 1/3–2/5 as long as inner ones, ± appressed, with an evident ± white ca. 0.2 mm wide border, margin glabrous, flat below apex; inner phyllaries blackish green, 0.9–1.3 cm, flat below apex. Ligules yellow; outer ligules flat, outside striped purplish; floret tube glabrous or sparsely pubescent. Stigmas blackish green. Achene dark ochraceous brown but later probably dark brown, 3.6–3.9 × ca. 0.9 mm; body tuberculate below, ± densely spinulose above, subabruptly narrowing into a thick subconic 0.7–0.8 mm cone, spinules thin, suberect, and acute; beak 5–6 mm. Pappus ± white, 5–6 mm. Fl. summer.

● Alpine meadows; 3400–3500 m. S Xinjiang.

44. Taraxacum austrotibetanum Kirschner & Štěpánek, **sp. nov.**

藏南蒲公英 zang nan pu gong ying

Type: China. Xizang: "Tibet meridionalis, ca. 55 km situ occid a Gongbo-Gyamda [工布江达]," ca. 4000 m, 29 Jul 1992, *L. Businská & R. Businský 12*, cultivated as JŠ 5099 (holotype, PRA; isotype, PRA).

Plantae laminis foliorum glaberrimis, phyllariis involucralibus externis lineari-lanceolatis usque anguste lanceolatis, atro-viridibus ecorniculatis dense ciliatis immarginatis, ligulis externis intus albis, centralibus pallide flavescentibus, stigmatibus griseo-viridibus, et praecipue acheniis badio-rubris vel ochraceo-badio-rubris, omnino grosse spinulosis, spinulis suberectis vel saepissime sursum arcuatis falciformibus insignes.

Herbs 10–20 cm tall. Petiole greenish or pale pinkish, narrow, very sparsely arachnoid at base; leaf blade light green to mid-green, linear to ± oblong-linear, (4–)7–12 × 0.9–2 cm, ± glabrous on both surfaces, undivided to pinnatifid or pinnatisect; lateral lobes or teeth (3 or)4–6 pairs, ± triangular to ± linear, 2–7 × ca. 1.5 mm, ± recurved to patent, proximal margin ± straight and entire, distal margin entire and ± concave; interlobes broad, margin entire or with a single tooth; terminal lobe elongated, base sagittate, apex subacute. Scapes overtopping leaves, arachnoid. Capitulum 2.5–3 cm wide. Involucre 7–9 mm wide, base narrowly rounded. Outer phyllaries usually 11–15, dark blackish olivaceous, ± not imbricate, narrowly lanceolate to ± linear-lanceolate, outermost ones (4–)5–7(–8) × 1.5–2 mm and 2/5–1/2 as long as inner ones, appressed to ± loosely appressed, paler border not developed or greenish, incon-

spicuous, and to 0.1 mm wide, margin ± densely whitish to yellowish ciliate, apex flat; inner phyllaries 1.2–1.4 cm, apex flat. Ligules white; outer ligules ± flat, outside striped light grayish purple; inner ligules ± pale yellowish, with grayish purple apical teeth. Stigmas gray-green. Anthers polliniferous; pollen grains irregular in size. Achene reddish brown to ochraceous reddish brown when fully ripe, 3.9–4.2 × ca. 1.1 mm; body densely spinulose throughout, less densely at base, subabruptly narrowing into a subcylindric 0.8–1 mm cone, spinules coarse, erect to sickle-shaped pointing upward, and usually laterally compressed; beak ca. 6 mm. Pappus pale yellowish white, ca. 6 mm. Fl. summer. Agamosperm.

● Alpine meadows; ca. 4000 m. S Xizang.

Taraxacum austrotibetanum is distinct in having white florets, ± densely ciliate narrow outer phyllaries, and reddish brown achenes with a conspicuous spinulosity. *Taraxacum roseoflavescens* differs from it in glabrous outer phyllaries and leaf shape. *Taraxacum przevalskii* and *T. tibetanum* differ from *T. austrotibetanum* in their yellow floret color. *Taraxacum przevalskii* also differs in its ovate-lanceolate, 4–6 mm wide outer phyllaries and *T. tibetanum* in its glabrous outer phyllaries.

45. Taraxacum suavissimum Kirschner & Štěpánek, **sp. nov.**

甜蒲公英 tian pu gong ying

Type: China. Yunnan: “Yunnan borealis, opp. Dêqên [德钦] (Atuntze),” 3300–4200 m, 30 Jun & 1 Jul 1992, *L. Businská & R. Businský 7*, cultivated as JŠ 5139 (holotype, PRA; isotype, PRA).

Paratypes: China. Yunnan: *ibidem*, *L. Businská & R. Businský 7*, cultivated as JŠ 6733 and 6229 (PRA).

Plantae foliis demum pinnatisectis lobis lateralibus saepe sursum curvatis, in parte distali linearibus, interlobiis integris vel uni- vel bilobulatis, phyllariis involucralibus exterioribus non imbricatis anguste lanceolatis usque lineari-lanceolatis, adpressis, minute corniculatis, ligulis pallidissime luteis, acheniis immaturis laete ochraceo armeniacis, in maturitate obscure brunneo-rubescentibus, corpore superne distincte spinuloso, in pyramidem crassam ± cylindricam subsensim transiente.

Herbs 12–20 cm tall. Petiole green or purple, narrow, very sparsely arachnoid at base; leaf blade light green to mid-green, linear-oblanceolate, (8–)12–16 × 1.2–3 cm, sparsely arachnoid, usually almost undivided to shallowly lobed for early leaves, pinnatisect for later leaves; lateral lobes or teeth 4–6 pairs, from a broad base abruptly narrowing into a ± linear 3–10 × 1.5–2 mm distal part, often slightly broadened near apex or evenly broad and apex acute, usually ± recurved or patent and distally curved upward, proximal margin ± straight or convex and entire, distal margin ± concave and entire or with one basal tooth; interlobes with margin entire or with a 1 or 2 teeth or lobules; terminal lobe ± elongated, 3-partite, basal segments patent and similar to lateral lobes, terminal segment narrowly triangular and margin entire or with 1 tooth. Scapes purplish green, ± overtopping leaves, arachnoid. Capitulum 3–4 cm wide. Involucre 1–1.2 cm wide, base ± rounded. Outer phyllaries (9–)11–15(–17), dark blackish green, ± not imbricate, narrowly lanceolate to ± linear-lanceolate, outermost ones 5–6(–8) × (1–)1.7–2.2 mm and 1/3–1/2 as long as inner ones, appressed, paler border not developed, margin ± ciliate, apex usually minutely corniculate; inner phyllaries 1.2–1.5 cm, apex ± minutely blackish corniculate. Ligules pale yellowish white; outer ligules ± flat, outside striped grayish purple; inner ligules with grayish purple apical teeth. Stigmas grayish green. Anthers polliniferous; pollen grains irregular in size. Achene initially (when almost ripe) light ochraceous red but finally turning dark grayish reddish brown, (4.3–)4.6–4.9(–5.1) × 1.2–1.3 mm; body densely spinulose in upper half, subgradually narrowing into a ± cylindric 0.8–1.1 × ca. 0.4 mm cone, spinules distinct, straight, and erect-patent; beak 8–9 mm. Pappus pale yellowish white, ca. 7 mm. Fl. summer. Agamosperm.

● Mountain grasslands, along paths; 3300–4200 m. NW Yunnan.

Taraxacum suavissimum differs from the other agamospermous *T.* sect. *Tibetana* species with comparable outer phyllaries and leaf shape. It differs from *T. apargia*, which has dark grayish olivaceous achenes (without reddish color), from *T. delicatum*, which has pollen absent and has a different fruit color and size, and from *T. austrotibetanum*, which has reddish brown achenes and white florets. From outside the limits of the section, *T. sikkimense* of *T.* sect. *Emodensia* has distinctly bordered outer phyllaries and a longer cone.

7. Taraxacum sect. **Emodensia** Kirschner & Štěpánek, **sect. nov.**

喜马拉雅蒲公英组 xi ma la ya pu gong ying zu

Type: *Taraxacum sherriffii* Soest.

Sectio distincta phyllariis involucralibus exterioribus plerumque numerosis, adpressis vel laxe adpressis, lineari-lanceolatis usque linearibus, conspicue cornutis vel corniculatis, saepissime distincte anguste pallide marginatis, flosculis plerumque luteis, stigmatibus non atro-coloratis, plerumque pallide virescentibus, acheniis colore variantibus (stramineis, rubro-badiis, ochraceis vel atro-griseis), corpore plerumque crasso, 1–1.4 mm lato, superne dense spinuloso, spinulis mediocribus rectis erecto-patentibus, in pyramidem vulgo crassam subcylindricam saepissime (0.8–)1–1.4(–1.9) mm longam subabrupte transiente, rostro plerumque 5–7 mm longo, pappo albo.

Petiole narrow; leaf blade deeply pinnatisect. Involucre 6–10 mm wide, base usually narrowly rounded. Outer phyllaries usually numerous (to 25), deep green to dark green, linear-lanceolate or linear, appressed or loosely so, usually distinctly pale bordered, apex conspicuously horned or corniculate. Ligules usually yellow, rarely whitish. Stigmas yellow to yellowish green. Achene variously colored, straw-colored brown, dark red-brown, ochraceous, or dark blackish gray; body ± densely spinulose above, usually subabruptly narrowing into a usually subcylindric (0.8–)1–1.4(–1.9) mm cone, spinules straight and erect to erect-patent; beak usually 5–7 mm. Pappus white. Sexual or agamospermous.

About 12–15 species: China, India, Nepal; 11 species (ten endemic) in China.

The diversity of *Taraxacum* sect. *Emodensia* is centered in Sichuan and Xizang.

Taraxacum heteroloma Handel-Mazzetti (Monogr. Taraxacum, 120. 1907) is a name based on a very heterogeneous set of syntypes, of which some come from Xizang. Most of the syntypes belong to *T.* sect. *Emodensia*, but we were not able to select any lectotype that would be in accordance with the original description. None of the taxa recognized below can be equated with the well-developed syntypes. As a consequence, the name is not used in the present treatment and the problem remains to be studied. Another name reported from China (FRPS 80(2): 52. 1999) is *T. pseudostenoceras* Soest (Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 271. 1961). Its type material belongs to *T.* sect. *Emodensia*, but we failed to find any Chinese material safely referable to this taxon. The name *T. kansuense* Nakai ex Koidzumi (Bot. Mag. (Tokyo) 50: 91. 1936) may belong to *T.* sect. *Emodensia*. However, as the description is imperfect, lacking achenes, and, most importantly, the type material is not currently extant, there is not enough information to deal with the name in detail. The name *T. kawaguchii* Kitamura (Acta Phytotax. Geobot. 15: 77. 1953) is based on a plant deposited in TNS. The specimen and the original description clearly show that the name belongs to *T.* sect. *Emodensia*. However, the type plant is not well preserved, and there are no achenes. We therefore are unable to complete the taxonomic study of this name or taxon.

1a. Pollen grains regular in size (plants sexual).
2a. Achene 3–3.5 mm, cone subconic and 0.4–1 mm ..... 54. *T. deludens*
2b. Achene 4.8–5.2 mm, cone cylindric and 1.2–1.9 mm ..... 55. *T. macula*
1b. Pollen grains irregular in size (plants agamospermous).
3a. Achene red to reddish brown ..... 56. *T. sikkimense*
3b. Achene of different color.
4a. Paler border to outer phyllaries absent or indistinct and very narrow.
5a. Outer phyllaries 0.9–1.3 mm wide; stigmas blackish; leaf lateral lobes conspicuously recurved ..... 47. *T. maurocarpum*
5b. Outer phyllaries 1.5–2 mm wide; stigmas dirty green; leaf lateral lobes patent to slightly recurved ..... 53. *T. ludlowii*
4b. Paler border to outer phyllaries distinct and at least 0.2–0.3 mm wide.
6a. Achene grayish straw-colored brown, yellowish straw-colored brown, or light ochraceous straw-colored brown.
7a. Outer phyllaries 22–25 ..... 46. *T. stenoceras*
7b. Outer phyllaries 11–18.
8a. Outer phyllaries 2.5–3.5 mm wide, apex flat to corniculate; stigmas light brownish yellow ..... 48. *T. kozlovii*
8b. Outer phyllaries 1.5–2.5 mm wide, apex conspicuously horned; stigmas grayish green ..... 50. *T. glaucophylloides*
6b. Achene of different color and darker.
9a. Achene 3.5–4 mm, cone 0.8–0.9 mm; outer phyllaries with pale 0.2–0.3 mm border ..... 49. *T. glaucophyllum*
9b. Achene 4.5–5.9 mm, cone 1–1.5 mm; outer phyllaries with paler 0.3–0.5 mm border.
10a. Achene blackish grayish brown ..... 51. *T. sherriffii*
10b. Achene deep cinnamon brown ..... 52. *T. badiocinnamomeum*

46. Taraxacum stenoceras Dahlstedt, Acta Horti Gothob. 2: 166. 1926.

角苞蒲公英 jiao bao pu gong ying

Herbs 15–20 cm tall. Petiole pinkish, ± unwinged; leaf blade light green, narrowly oblanceolate, 7–14(–17) × 1.2–3 cm, sparsely arachnoid, pinnatilobed to pinnatisect, midvein pinkish; lateral lobes (3 or)4–7 pairs, usually hamate-recurved, 1.5–2 cm, narrow, margin apically sparsely, minutely, or coarsely dentate (to lobulate) or rarely entire; interlobes short, margin entire, dentate, or lobulate; terminal lobe helmet-shaped to triangular, 1.5–2 × 1.2–2.2 cm, margin usually entire. Scapes brownish green, ± equaling leaves, sparsely arachnoid at base but densely arachnoid below capitulum. Capitulum 3–4 cm wide. Involucre 5–7 mm wide, base narrowly rounded. Outer phyllaries 22–25, pale green, ± not imbricate, linear-lanceolate, outermost ones 7–8 × 1.2–1.8 mm and ca. 3/4 as long as inner ones, ± subappressed, with a paler 0.2–0.3 mm wide border, margin glabrous to sparsely ciliate, apex with a thin perpendicular ca. 5 mm horn; inner phyllaries 5–7 mm, with a thin horn below apex. Ligules (pale) yellow; outer ligules flat, outside striped purplish; inner ligules with purple teeth; floret tube outside pubescent. Stigmas dirty yellow to greenish. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 3.8–4.4 × 1–1.2 mm; body apically spinulose, ± gradually narrowing into a subconic ca. 1.2 mm cone; beak 6–7 mm. Pappus ± white, 5–6 mm. Fl. summer. Agamosperm.

● Disturbed mountain grasslands; 3000–3600 m. NW Sichuan.

Reports of *Taraxacum stenoceras* from SE Gansu, E and SE Qinghai, and Xizang (FRPS 80(2): 52. 1999; Higher Pl. China 11: 781. 2005) remain to be proven.

47. Taraxacum maurocarpum Dahlstedt, Acta Horti Gothob. 2: 176. 1926.

灰果蒲公英 hui guo pu gong ying

Herbs 5–6 cm tall, delicate. Petiole narrow; leaf blade deep green, broadly linear, 3–5.5 × 0.6–0.9 cm, sparsely arachnoid, deeply lobed; lateral lobes 3–5 pairs, narrowly triangular, recurved, margin entire; interlobe margin entire; terminal lobe elongated sagittate. Scapes ± overtopping leaves, sparsely arachnoid but more densely arachnoid below capitulum. Capitulum ca. 2.5 cm wide. Involucre ± narrowly rounded to broadly ob-

conic, 6–7 mm wide. Outer phyllaries 14–19, blackish green, linear-lanceolate, outermost ones 5–9 × 0.9–1.3 mm, unequal, and 1/3–2/3 as long as inner ones, loosely appressed, with a paler indistinct ca. 0.2 mm wide border, margin sparsely ciliate, apex attenuate and with a evident blackish 0.7–1 mm horn; inner phyllaries blackish, 1.1–1.2 cm. Ligules yellow; outer ligules flat, outside striped grayish purple; inner ligules with blackish teeth. Stigmas blackish. Anthers polliniferous; pollen grains irregular in size. Achene blackish brown, 3.3–3.7 × ca. 1 mm; body apically minutely spinulose, subabruptly narrowing into a subconic 1–1.1 mm cone; beak ca. 7 mm. Pappus yellowish white, 5–6 mm. Fl. summer. Agamosperm.

● Alpine grasslands; ca. 4000 m. W Sichuan.

We did not see material confirming reports of *Taraxacum mauro-carpum* from Qinghai, Xizang, and Yunnan (FRPS 80(2): 70. 1999; Higher Pl. China 11: 785. 2005).

48. Taraxacum kozlovii Tzvelev, Novosti Sist. Vyssh. Rast. 24: 216. 1987.

大刺蒲公英 da ci pu gong ying

Herbs 5–20 cm tall. Petiole purplish, ± unwinged but dilated at very base; leaf blade light green to grayish green, narrowly oblanceolate, 5–15 × 1.5–2 cm, subglabrous, remotely pinnatilobed, midvein pale green; lateral lobes 2 or 3(or 4) pairs, to 1 cm, narrow, usually recurved to patent, margin usually entire; interlobes long, margin entire; terminal lobe elongated, to 5 cm, margin usually entire. Scapes brownish green, ± overtopping leaves, sparsely arachnoid below capitulum. Capitulum 3–4 cm wide. Involucre 7–11 mm wide, base ± rounded. Outer phyllaries 14–18, pale green to deep green, ± not imbricate, linear-lanceolate, outermost ones 8–9 × 2.5–3.5 mm and ca. 4/5 as long as inner ones, ± loosely appressed with whitish narrow border 0.3–0.4 mm, margin ± glabrous, flat or indistinctly corniculate below apex; inner phyllaries 1.3–1.6 cm, flat to corniculate below apex. Ligules yellow; outer ligules flat, outside striped grayish pink; inner ligules with purple to blackish teeth. Stigmas discolored, brownish yellow. Anthers polliniferous; pollen grains probably slightly irregular in size. Achene (when unripe) yellowish straw-colored brown, 4–4.4 × 1.4–1.6 mm; body apically densely coarsely spinulose with acute spinules and squamules, ± tuberculate to smooth below, abruptly narrowing into a conic 1.1–1.3 mm cone; beak ca. 6 mm. Pappus dirty white, ca. 5 mm. Fl. summer. Probably agamosperm.

● Mountain grasslands; probably above 2500 m. N Gansu.

Taraxacum kozlovii is known only from the type specimen.

49. Taraxacum glaucophyllum Soest, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 266. 1961.

苍叶蒲公英 cang ye pu gong ying

Herbs 15–20 cm tall, base usually thickened by remnants of old petioles. Petiole purplish, ± unwinged; leaf blade glaucous green to grayish green, linear to linear-oblanceolate, ca. 10 × 0.8–1.1 cm, ± glabrous, margin subentire, remotely dentate, or shallowly lobed, midvein pinkish; lateral lobes or teeth 1–3 pairs, sometimes alternate, mostly 3–4 mm, apex linear, narrow, and patent; interlobes long, margin entire; terminal lobe conspicuously elongated, to 3 cm, margin entire. Scapes brownish green, overtopping leaves, ± glabrous to sparsely arachnoid. Capitulum ca. 2 cm wide. Involucre 7–8 mm wide, base ± rounded. Outer phyllaries 10–13, dark green, ± not imbricate, linear-lanceolate, outermost ones 5–7 × 1.2–1.5 mm and 1/2–2/3 as long as inner ones, ± subappressed, with a narrow paler border ± white at base and distally pinkish, margin subglabrous, apex with a conspicuous perpendicular horn; inner phyllaries 1.3–1.5 cm, with a horn below apex. Ligules yellow, subtubular to involute; outer ligules outside striped pale grayish pink. Stigmas dark. Anthers polliniferous; pollen grains irregular in size. Achene dark gray, 3.5–4 × 1.1–1.3 mm; body distally spinulose, subabruptly narrowing into a thick subcylindric 0.8–0.9 × ca. 0.4 mm cone; beak longer than ca. 5 mm. Pappus ± yellowish white, 6–7 mm. Fl. summer. Agamosperm.

● Alpine grassland slopes; 3900–4200 m. Xizang.

Reports of *Taraxacum glaucophyllum* from Qinghai, Sichuan, and Yunnan (FRPS 80(2): 70. 1999; Higher Pl. China 11: 786. 2005) should be revised.

Achenes described in the protologue of *Taraxacum glaucophyllum* probably come from the paratype specimen (Lhasa, *H. E. Richardson 307A*, BM) and are not conspecific with the holotype. The holotype achenes, although also immature, show signs of darkening, and the description of ripe ones (mainly from JŠ 6223B, PRA) is included in the present description.

50. Taraxacum glaucophylloides Kirschner & Štěpánek, **sp. nov.**

灰叶蒲公英 hui ye pu gong ying

Type: China. Sichuan: "Sichuan occid., Litang [理塘], 15–21 km merid.-occid. a Litang," 4100–4250 m, 22–23 Jun 1992, *L. Businská & R. Businský 6*, cultivated as JŠ 6732 (holotype, PRA; isotypes, PRA).

Paratypes: China. Sichuan: *ibidem*, *L. Businská & R. Businský 6*, cultivated as JŠ 5131 and JŠ 6226 (PRA).

A specie valde simili, Taraxaco glaucophyllo Soest, *plantae nostrae praecipue phyllariis involucralibus exterioribus longioribus, densius ciliatis, acheniis stramineis vel ochraceo-stramineis, longioribus, omnino notabiliter densius spinulosis, in pyramidem subcrassam 1–1.2 mm longam abeuntibus differunt.*

Herbs 10–15 cm tall. Petiole purple, unwinged; leaf blade light grayish green often suffused purplish, linear to ± oblong-linear, 5–10 × 0.7–1.6 cm, sparsely arachnoid, usually pinnatilobed to pinnatisect; lateral lobes or teeth 3–5 pairs, ± linear-triangular, slightly pointing upward or patent, margin entire; interlobes ± broad, margin entire; terminal lobe triangular to narrowly triangular, margin entire, basal segments usually obtuse and ± patent. Scapes purplish green, equaling leaves, arachnoid. Capitulum 2.5–3 cm wide. Involucre 9–10 mm wide, base narrowly rounded. Outer phyllaries usually 11–15, ± not imbricate, narrowly lanceolate to ± linear-lanceolate, outermost ones 7–10 × 1.5–2.5 mm and ca. 2/3 as long as inner ones, appressed to ± loosely appressed or erect, middle part blackish green, border evident, paler, greenish white or white often suffused purplish near apex, and ca. 0.5 mm wide, margin ciliate, apex

with large blackish purple horn; inner phyllaries 1.3–1.6 cm, apex purple and with a large blackish horn below it. Ligules yellow; outer ligules ± flat, outside striped blackish purple; inner ligules with ± yellow long apical teeth. Stigmas grayish green. Anthers polliniferous; pollen grains irregular in size. Achene straw-colored brown to slightly ochraceous straw-colored brown when fully ripe, ± laterally compressed, 4–4.5 × 1.3–1.5 mm; body densely spinulose throughout but particularly on ridges, subabruptly to ± abruptly narrowing into a thick ± cylindric 1–1.2 × ca. 0.4 mm cone, spinules crowded and erect to bent upward; beak 7–8 mm. Pappus pale yellowish white, 6–7 mm. Fl. summer. Agamosperm.

● Alpine calcareous meadows; 4100–4300 m. W Sichuan.

Taraxacum glaucophylloides is similar to *T. glaucophyllum* but has totally different achenes.

51. Taraxacum sherriffii Soest, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 272. 1961.

拉萨蒲公英 la sa pu gong ying

Herbs 12–15 cm tall, base often thickened by remnants of old petioles. Petiole pale green, ± unwinged; leaf blade mid-green to slightly grayish green, narrowly oblanceolate to broadly linear in outline, 10–13 × 1.5–1.8 cm, sparsely arachnoid, pinnatilobed to pinnatisect but some almost undivided, midvein pale green; lateral lobes of inner leaves 3–5 pairs, linear-triangular, narrow, usually ± patent to recurved, margin entire or distal side with a single tooth on base; interlobes long, narrow, to 1.5 × 0.3 cm, margin entire; terminal lobe subobtuse, margin usually entire, basal segments ± patent. Scapes brownish green, ± equaling leaves, sparsely arachnoid to subglabrous. Capitulum 2–2.5 cm wide. Involucre 7–10 mm wide, base ± rounded. Outer phyllaries (11–)13–19, blackish green, ± not imbricate, linear-lanceolate, outermost ones 5–8 × 1.3–2 mm and ca. 3/4 as long as inner ones, ± appressed, with a whitish narrow ca. 0.4 mm border, margin glabrous to sparsely ciliate, apex with a conspicuous horn; inner phyllaries 1–1.2 cm, callose below apex. Ligules yellow; outer ligules flat, outside striped pinkish gray; inner ligules with grayish purple teeth. Stigmas slightly grayish or greenish pale yellow. Anthers polliniferous; pollen grains irregular in size. Achene light gray straw-colored brown when unripe but later getting darker and becoming blackish gray(-brown), 4.5–5.9 × 1.1–1.4 mm; body spinulose in upper 1/2–3/5 on ridges and apically also elsewhere, ± subgradually narrowing into a cylindric 1–1.5 mm cone, spinules thick and acute; beak 4–5.5 mm. Pappus ± white, ca. 6 mm. Fl. late spring. Agamosperm.

● Disturbed grasslands; 3500–3600 m. Xizang.

Reports of *Taraxacum sherriffii* from Qinghai (FRPS 80(2): 66. 1999; Higher Pl. China 11: 785. 2005) and NW Yunnan (FRPS 80(2): 66. 1999) need revision.

In the region of Lhasa, Xizang, sexual plants similar to *Taraxacum sherriffii* are found. They are characterized by obconic involucre and smaller and paler achenes. Further study is needed.

52. Taraxacum badiocinnamomeum Kirschner & Štěpánek, **sp. nov.**

棕色蒲公英 zong se pu gong ying

Type: China. Xizang: “Town of Shigatse [日喀则], monastery of Narthang [纳唐寺] SW of the town,” 3850–4050 m, 7 Jun 2002, *M. Štefánek 39*, cultivated as JŠ 7815 (holotype, PRA; isotypes, PRA).

Plantae agamospermae, foliis oblongo-linearibus pinnatisectis, lobis lateralibus 4 ad 7 utrinque, ± integris, anguste triangularibus vel lineari-triangularibus, phyllariis involucralibus exterioribus saepe lineari-lanceolatis, conspicue cornutis, marginibus albidis distinctis, stigmatibus pallide virescenti-luteis vel subluteis, acheniis magnis, saturate cinnamomeo-badiis vel saturate badiis, dense spinuloso-squamulosis, in pyramidem subcrassam 1.2–1.4 mm longam subabrupte abeuntibus insignes.

Herbs 12–17 cm tall. Petiole green or pinkish, arachnoid, unwinged or narrowly winged in outer leaves, midvein pinkish; leaf blade ± light green, ± oblong-linear, 5–11 × 1–2 cm, sparsely arachnoid, usually pinnatisect but outer leaves usually shallowly pinnatilobed; lateral lobes 4–7 pairs, narrowly triangular to ± linear-triangular, ± patent to subrecurved, margin entire or on distal side with a single tooth near base; interlobes ± narrow, margin entire; terminal lobe ± triangular, margin ± entire, apex subobtuse. Scapes purplish green, equaling leaves, arachnoid. Capitulum 2.5–3 cm wide. Involucre 0.9–1.1 cm wide, base rounded Outer phyllaries usually 15–22, ± not imbricate, narrowly lanceolate to ± linear-lanceolate, outermost ones 7–9 × 1.3–2.5 mm and ca. 2/3 as long as inner ones, appressed to ± loosely appressed, middle part blackish green, border evident, paler, greenish white to whitish and often suffused purplish near apex, membranous, and 0.3–0.5 mm wide, margin ciliate, apex with large blackish horn; inner phyllaries 1.3–1.7 cm, apex with a blackish horn. Ligules yellow; outer ligules ± flat, outside striped gray; inner ligules with purple long apical teeth. Stigmas pale greenish yellow (almost yellow). Anthers polliniferous; pollen grains irregular in size. Achene initially pale ochraceous brown then getting darker to become deep cinnamon brown or brown when fully ripe, 5–5.6 × 1.2–1.4 mm; body densely spinulose-squamulose in upper half, subabruptly narrowing into a subcylindric 1–1.2 × ca. 0.4 mm cone; beak 5–6 mm. Pappus yellowish white, 5–6 mm. Fl. summer. Agamosperm.

● Alpine calcareous meadows; 3800–4300 m. S Xizang.

Taraxacum badiocinnamomeum is similar to *T. sherriffii* but has a substantially different achene color.

53. Taraxacum ludlowii Soest, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 269. 1961.

林周蒲公英 lin zhou pu gong ying

Herbs to 35 cm tall. Petiole purplish, to 10 cm, ± unwinged; leaf blade paler mid-green, narrowly oblanceolate, 15–20 × 1.6–2.5 cm, ± glabrous, pinnatilobed, midvein pale green or pinkish; lateral lobes 4–6 pairs, triangular, to 1.2 cm, usually ± patent to ± recurved, margin usually entire or rarely with a single tooth or lobule, base broad, apex attenuate and acute; interlobes 10–13 × 5–8 mm, margin entire or rarely with a single tooth or lobule; terminal lobe narrowly triangular-sagittate, elongated to 3.5 cm, margin usually entire, apex acute.

Scapes brownish green but purplish at base, overtopping leaves, arachnoid below capitulum. Capitulum 3–4 cm wide. Involucre 1–1.5 cm wide, base rounded. Outer phyllaries 13–18, dark (blackish) green, ± not imbricate, linear-lanceolate, outermost ones 6–8(–10) × 1.5–2 mm and 2/3–3/4 as long as inner ones, ± appressed, with a pale almost indistinct very narrow border, margin glabrous to sparsely ciliate, with a horn below apex; inner phyllaries 1.2–1.4 cm, with a broad membranous margin, corniculate below apex. Ligules yellow; outer ligules flat, outside striped grayish pink; inner ligules with blackish purple teeth. Stigmas dirty green. Anthers polliniferous; pollen grains probably irregular in size. Achene unknown. Fl. summer. Agamosperm.

● Mountain grassland slopes; ca. 4200 m. Xizang (Lhünzhub).

Taraxacum ludlowii is known only from the type specimen. Reports of collections from other counties in Xizang (FRPS 80(2): 71. 1999) are incorrect.

54. Taraxacum deludens Kirschner & Štěpánek, **sp. nov.**

假蒲公英 jia pu gong ying

Type: China. Sichuan: “Sikang [西康], Taofu [道孚] distr., Taofu, in terra ‘loess,’” 3000 m, 16 Sep 1934, *H. Smith 11458* (holotype, UPS; isotype: PRA).

Paratypes: China. Sichuan: “Sikang [西康], Taofu [道孚], Taining (Ngata),” *H. Smith 11088* (PRA, UPS); *H. Smith 12210* (PRA, UPS); *H. Smith 12015* (CAS, UPS); *H. Smith 11865* (UPS); *H. Smith 11758* (UPS); *H. Smith 11920* (UPS).

Plantae sexuales graciles foliis pinnatilobis usque profunde hamato-pinnatisectis, phyllariis involucralibus exterioribus lineari-triangularibus cornutis, viridibus usque atro-viridibus sparse ciliatis, ligulis apice conspicue denticulatis, stigmatibus virescentibus, acheniis colore variantibus, usque ad 3.5 mm longis, pyramide conica 0.4–0.8 mm longa.

Herbs 5–13 cm tall, delicate. Petiole pale green or sometimes pinkish, ± unwinged; leaf blade mid-green, narrowly oblanceolate in outline, 2–8 × 0.8–1.5(–2.3) cm, sparsely arachnoid, pinnatilobed to pinnatisect, midvein pale green or purplish; lateral lobes 2–5 pairs, variably shaped from hamate-triangular to linear-triangular, 2–13 mm, strongly recurved or rarely to ± patent, margin usually entire or rarely sparsely denticulate, apex ± obtuse; interlobes short, narrow, margin entire or with 1 or 2 minute teeth; terminal lobe narrowly helmet-shaped to lingulate, margin entire, apex subobtuse. Scapes brownish green, sparsely to densely arachnoid below capitulum. Capitulum 1.5–3 cm wide. Involucre 5–7 mm wide, base narrowly rounded to ± obconic. Outer phyllaries 13–18, green to blackish green, ± not imbricate, linear-lanceolate to linear-triangular, outermost ones (3–)5–8 × 0.9–1.5 mm and to 3/4 as long as inner ones, appressed to erect, border whitish green and ca. 0.2 mm or not visible, margin sparsely ciliate, with a horn 1–1.5 mm or corniculate below apex or sometimes apex flat; inner phyllaries green, 1–1.4 cm, apex flat to corniculate. Ligules (pale) yellow; outer ligules ± flat, outside striped grayish green to grayish purple; inner ligules with long apically blackish or yellow teeth. Stigmas green. Anthers polliniferous; pollen grains regular in size. Achene gray, straw-colored brown, yellowish, blackish brown, or brick red, 3–3.5 × 1–1.2 mm; body distally subsparsely spinulose, finely squamulose, or ± smooth below, subabruptly narrowing into a subconic 0.4–0.8(–1) mm cone; beak 6–7.5 mm. Pappus yellowish white, 4–5 mm. Fl. late summer. Sexual.

● Mountain grasslands, trail margins, open ground; 3000–3700 m. W Sichuan.

Taraxacum deludens is a variable sexual representative of *T.* sect. *Emodensia*. It is similar to *T. maurocarpum* and *T. stenoceras*. It differs from both in its sexual reproduction, from the former by darker stigmas and much shorter cone, and from the latter by much shorter achenes and cone.

55. Taraxacum macula Kirschner & Štěpánek, **sp. nov.**

斑点蒲公英 ban dian pu gong ying

Type: China. Sichuan: “Sikang [西康], Kangting [康定] (Tachienlu), mont. occid., in prato aprico, graminoso,” 3200 m, 15 Jul 1934, *H. Smith 10470* (holotype, UPS; isotype, PRA).

Paratypes: China. Sichuan: “Sikang [西康], Kangting [康定] (Tachienlu) distr., Tapaoshan,” 4500 m, *H. Smith 10463* (UPS).

Plantae sexuales foliis plerumque profunde pinnatisectis, phyllariis involucralibus exterioribus lineari-triangularibus attenuatis, ± planis, dense ciliatis, ± immarginatis, stigmatibus viridibus, acheniis stramineo-brunneis usque atro-badiis, usque ad 5.2 mm longis, 1.1–1.4 mm crassis, pyramide cylindrica, usque ad 1.9 mm longa.

Herbs 6–15 cm tall, slender. Petiole green but grayish purple at very base, unwinged; leaf blade mid-green, narrowly oblanceolate in outline, 3–9 × 0.8–1.9 cm, sparsely arachnoid, usually pinnatisect but sometimes almost undivided, midvein usually pale green; lateral lobes 3–7 pairs, usually linear-triangular, to 9 mm, subpatent to recurved, distal margin usually sigmoid and entire; interlobes usually short, narrow; terminal lobe narrowly triangular-sagittate, terminal segment often elongated and 2–2.5 cm and margin entire. Scapes pale brownish green, equaling to overtopping leaves, usually densely arachnoid. Capitulum 2–4 cm wide. Involucre 5–6 mm wide, base obconic. Outer phyllaries 10–16, green to blackish green, ± not imbricate, linear to linear-triangular with attenuate apex, outermost ones 3.5–6.5 × 0.7–1.2 mm and 1/3–2/5 as long as inner ones, ± appressed, some recurved at apex, ± unbordered or indistinctly bordered, margin densely ciliate, apex ± flat to callose; inner phyllaries 1.1–1.5 cm, apex ± flat. Ligules (pale) yellow; outer ligules ± flat, outside striped grayish pink; inner ligules with long teeth grayish purple at apex. Stigmas green. Anthers polliniferous; pollen grains regular in size. Achene pale brown to blackish brown, 4.8–5.2 × 1.1–1.4 mm; body usually ± smooth below, distally with erect acute subsparse spinules, ± abruptly narrowing into a cylindric 1.2–1.9 mm cone; beak ca. 7 mm. Pappus yellowish white, ca. 5 mm. Fl. summer. Sexual.

● Alpine meadows and grasslands; 3200–4500 m. W Sichuan.

Taraxacum macula is another sexual representative of *T.* sect. *Emodensia*. It is distinct in having an unusually long cylindric cone; outer phyllaries very narrow, distally attenuate, and densely ciliate; and, as a rule, distinctly pinnatisect leaves.

56. Taraxacum sikkimense Handel-Mazzetti, Monogr. Taraxacum, 103. 1907.

锡金蒲公英 xi jin pu gong ying

Type: India. Sikkim: “Lachen,” 12,000 ft, Jul 16/[18]49, *J. D. Hooker s.n.* (**lectotype, designated here**: K, no. det. 8783).

Herbs (2.5–)6–10(–12) cm tall. Petiole usually purplish, unwinged; leaf blade ± mid-green, narrowly oblong-lanceolate in outline, 2.5–8(–12) × 0.9–1.5 cm, ± sparsely arachnoid, pinnatisect, midvein usually purplish; lateral lobes 3 or 4 pairs, narrowly triangular, strongly recurved, proximal margin ± straight and entire, distal margin at base straight or convex and entire, apex subacute to subobtuse; interlobes long, narrow; terminal lobe narrowly triangular-sagittate or almost 3-partite, margin entire, apex often obtuse. Scapes brownish green, ± equaling leaves, arachnoid. Capitulum 2–3 cm wide. Involucre 0.9–1.2 cm wide, base narrowly rounded. Outer phyllaries 13–19, ± blackish green, subimbricate, linear-triangular to linear-lanceolate, outermost ones 4.5–6 × 1–1.3(–2) mm and 1/3–1/2 as long as inner ones, ± subglabrous, with a whitish to pinkish 0.2–0.3 mm bordered gradual transition into a dark middle band, ± flat or callose below apex; inner phyllaries black-green, 1.1–1.4 cm, apex ± flat. Outer ligules whitish to whitish yellow, ± flat, outside striped purplish; inner ligules pale yellow. Stigmas blackish to dark grayish green. Anthers polliniferous; pollen grains irregular in size. Achene deep red, 4.5–4.8 × 1–1.1 mm; body ± smooth below, distally densely spinulose, ± abruptly narrowing into a cylindric 1–1.3 mm cone, spinules suberect and acute; beak 5–6 mm. Pappus white to slightly yellowish white, ca. 6 mm. Fl. summer. Agamosperm.

Alpine grasslands; 3800–5000 m. Xizang [India (Sikkim), Nepal].

Taraxacum sikkimense is also reported from Qinghai, Sichuan, and Yunnan (FRPS 80(2): 58. 1999; Higher Pl. China 11: 783. 2005), but more evidence is needed.

8. Taraxacum sect. **Mongolica** (Dahlstedt) G. Jacot, J. N. China Branch Roy. Asiat. Soc. 51: 141. 1930.

蒙古蒲公英组 meng gu pu gong ying zu

Taraxacum [unranked] *Mongolica* Dahlstedt, Acta Horti Gothob. 2: 159. 1926.

Plant base whitish arachnoid. Middle leaves usually arachnoid. Petiole unwinged to narrowly winged; leaf blade deeply lobed. Scapes usually arachnoid. Capitulum pointing upward after anthesis. Involucre base rounded. Outer phyllaries 9–17, light green or green, imbricate or not so, linear-lanceolate to ovate, appressed or loosely appressed to erect, usually with distinct venation, almost unbordered or pale bordered, margin usually densely ciliate. Ligules light yellow, yellow, or rarely white. Achene usually pale grayish straw-colored brown, deep brown, straw-colored olivaceous, or rarely reddish, 4–6 × (0.9–)1.1–1.4(–2) mm; body frequently spinulose and tuberculate throughout, usually densely spinulose and squamulose in upper 1/5–1/3, gradually to subabruptly narrowing into a subcylindric to less often subconic 0.7–1.5 mm cone; beak 6–10 mm, thin. Pappus white or yellowish, (4–)6–8 mm.

About 45 species: centered in Japan and NE China; 11 species (nine endemic) in China.

A number of specific names, based on specimens from China belonging to this section, remain unclear.

The names *Taraxacum mongolicum* var. *caninum* G. Jacot, *T. mongolicum* var. *laeve* G. Jacot, and *T. duplex* G. Jacot are based on the material collected by G. Jacot in 1927–1928 in “Tsinan” (now Jinan) in Shandong and originally deposited at SCU, later to be transferred to JSPC. The material, however, was destroyed, probably during WWII, and is not extant. Obvious lectotypes for the names are achene figures 1a, 1b, and 1c, respectively (G. Jacot, J. N. China Branch Roy. Asiat. Soc. 61: pl. 1. 1930). As this problem requires further study, the names remain uninterpreted in the present treatment.

Taraxacum ohwianum Kitamura, described from N Korea, was several times reported to occur in China (e.g., FRPS 80(2): 43. 1999). The holotype, depicted in Kitamura (Mem. Coll. Sci. Kyoto Imp. Univ., Ser. B, Biol. 24: pl. III, f. 4. 1957) is no longer extant, and we have to rely on authentic material in KYO. *Taraxacum ohwianum* is characterized by ovate, broadly pale bordered outer phyllaries and by light straw-colored, 4.5–4.9 × 1.1–1.3 mm achenes, with body densely shortly spinulose above, otherwise usually densely tuberculate, and gradually narrowing into a subcylindric (subconic at base and ± cylindric distally) 1–1.3 mm cone. The closest Chinese taxon (*T. albomarginatum*, incl. *T. mandshuricum*) has achenes substantially less densely spinulose, narrower, and cone much shorter, and cannot be equated with *T. ohwianum*. We failed to find convincing Chinese material belonging to *T. ohwianum*.

The names *Taraxacum antungense* Kitagawa (J. Jap. Bot. 22: 173. 1948), *T. argutedenticulatum* Nakai & Koidzumi (Bot. Mag. (Tokyo) 50: 142. 1936), *T. falcilobum* Kitagawa (Rep. Inst. Sci. Res. Manchoukuo 2: 312. 1938), *T. glaucanthum* Nakai & Koidzumi (Bot. Mag. (Tokyo) 50: 91. 1936, not (Ledebour) Candolle, 1838), *T. hangchouense* Koidzumi (Bot. Mag. (Tokyo) 50: 144. 1936), *T. hondae* Nakai & Koidzumi (Bot. Mag. (Tokyo) 50: 143. 1936), *T. pseudodissectum* Nakai & Koidzumi (Bot. Mag. (Tokyo) 50: 92. 1936), and *T. urbanum* Kitagawa (J. Jap. Bot. 22: 174. 1948) are all based on the material from China collected in the 1930s by Japanese botanists. In spite of a great effort of curators of TI and KYO, and the well-documented type material of H. Koidzumi in TNS, the type material for these names was not found in the collections. All these names, according to their protologues, probably belong to *T.* sect. *Mongolica*. As the original material is missing, and the protologue descriptions are not satisfactorily informative, we leave these names for further investigation.

1a. Ligules white or very pale whitish yellow ..... 61. *T. coreanum*
1b. Ligules of other colors.
2a. Ligules conspicuously orange-colored ..... 65. *T. aurantiacum*
2b. Ligules yellow.
3a. Achene reddish brown to light red ..... 63. *T. junpeianum*

3b. Achene of other colors, usually light straw-colored brown to deep brown.
4a. Outer ligules completely tubular ..... 64. *T. siphonanthum*
4b. Outer ligules flat to canaliculate.
5a. Outer phyllaries ovate to broadly lanceolate.
6a. Achene 0.9–1 mm thick, body gradually narrowing into a thin cylindric cone; outer phyllaries ± imbricate ..... 62. *T. albomarginatum*
6b. Achene 1.1–1.3 mm thick, body abruptly narrowing into a thick or medium-thick conic to subcylindric cone; outer phyllaries ± not imbricate.
7a. Outer phyllaries 12–15; leaf interlobes with a distinct brownish purple spot, filiform dentate to lobulate ..... 66. *T. variegatum*
7b. Outer phyllaries 8–12; leaf interlobes green, unspotted, subentire or remotely dentate, not lobulate ..... 67. *T. lamprolepis*
5b. Outer phyllaries linear-lanceolate to narrowly lanceolate.
8a. Achene light (yellowish) straw-colored brown; achene body ± abruptly narrowing into cone ..... 66. *T. variegatum*
8b. Achene mid-brown, deep brown, or grayish brown; achene body gradually narrowing into cone.
9a. Pollen grains regular in size (plants sexual); pappus 4–5 mm ..... 57. *T. formosanum*
9b. Pollen grains irregular in size; pappus 5–10 mm.
10a. Outer phyllaries 9–15; stigmas pale green ..... 58. *T. mongolicum*
10b. Outer phyllaries 15–20; stigmas dark.
11a. Achene deep pure brown; achene body 1.3–1.4 mm thick, cone 0.9–1.2 mm ..... 59. *T. liaotungense*
11b. Achene grayish brown; achene body 1.1–1.3 mm thick, cone 1.1–1.5 mm ..... 60. *T. erythropodium*

57. Taraxacum formosanum Kitamura, Acta Phytotax. Geobot. 2: 48. 1933.

台湾蒲公英 tai wan pu gong ying

Herbs 8–15 cm tall. Leaves numerous, prostrate to erect-patent; petiole narrow; leaf blade grayish green, narrowly oblanceolate to linear, 6–18 × 1–3 cm, almost glabrous, pinnatilobed to pinnatisect; lateral lobes 3–5 pairs, broadly triangular, often with obtuse broad tooth on apical margin; interlobes broad, margin entire; terminal lobe triangular to helmet-shaped, 1.5–3 × 1–2 cm, often pentagonal, apex rounded to subobtuse. Scapes brownish green, equaling to slightly overtopping leaves, scattered arachnoid. Capitulum ca. 3 cm wide. Involucre pale green, 6–8 mm wide, base ± rounded. Outer phyllaries 13–15, mid-green, ± imbricate, linear-lanceolate to narrowly lanceolate, outermost ones 4.5–6 × 0.8–1.5 mm and 1/3–2/5 as long as inner ones, loosely appressed, distinctly veined, border indistinct, paler green to membranous, and to 0.2 mm wide, margin ± glabrous, apex with a green or purplish thick horn to 1 mm; inner phyllaries 1.1–1.3 cm, apex corniculate. Ligules yellow; outer ligules outside striped blackish purple; inner ligules with blackish apical teeth. Stigmas pale green to ± yellow. Anthers polliniferous; pollen grains regular in size. Achene brown, ca. 4 × 1–1.2 mm; body tuberculate throughout, apically tuberculate-squamulose, gradually narrowing into a subcylindric 0.8–1 mm cone; beak 7–10 mm. Pappus white, 4–5 mm. Fl. Mar–Apr. Sexual. 2*n* = 16*.

● Seashore dunes, open ruderal places; below 200 m. Taiwan.

This species was also reported from Liaoning (Kitagawa, Bot. Mag. (Tokyo) 47: 830–831. 1933), but the material belongs to other species.

58. Taraxacum mongolicum Handel-Mazzetti, Monogr. Taraxacum, 67. 1907.

蒙古蒲公英 meng gu pu gong ying

Herbs 8–25 cm. Petiole usually narrow; leaf blade mid-green, oblanceolate, 6–15 × 2–3.5 cm, subglabrous to sparsely arachnoid, pinnatilobed, pinnatisect, or rarely undivided; lateral lobes 3 or 4 pairs, broadly triangular, obtusely deltoid, or broadly linear, patent to recurved, distal margin sparsely dentate or entire, apex obtuse; interlobes broad, sometimes spotted dark purple, margin entire to sparsely dentate; terminal lobe broadly triangular, apex broadly obtuse. Scapes single or rarely branched with an ascending side scape, brownish green, equaling to slightly overtopping leaves, scattered arachnoid but densely arachnoid below capitulum. Capitulum 3–4 cm wide. Involucre mid-green, 1–1.2 cm wide, base ± rounded. Outer phyllaries 9–15, mid-green to pale green, ± not imbricate, linear-lanceolate to narrowly lanceolate, outermost ones 6–9 × 0.8–2.5 mm and ca. 1/2 as long as inner ones, loosely appressed, distinctly veined, border indistinct, paler green to membranous, often suffused pink, and 0.1–0.3 mm wide, margin ± densely ciliate, apex with a green or purplish thick horn to 1.5 mm; inner phyllaries 1.1–1.5 cm, apex flat to corniculate. Ligules yellow; outer ligules outside striped grayish purple; inner ligules with blackish to purple apical teeth. Stigmas pale green. Anthers polliniferous; pollen grains irregular in size. Achene ± brown to grayish brown, 4.2–4.6 × 1.1–1.3 mm; body tuberculate throughout, apically densely tuberculate-squamulose, gradually narrowing into a subconic 1–1.2 mm cone; beak 7–10 mm. Pappus yellowish, ca. 6 mm. Fl. spring, occasionally also to late summer. Agamosperm. 2*n* = 24*.

● Abandoned fields, grasslands, along paths and roads; 800–2000(–2800) m. Anhui, Fujian, Guangdong, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Zhejiang.

The stated distribution of *Taraxacum mongolicum* is based on the report in FRPS (80(2): 34. 1999), but material has not been revised and can only be confirmed for Hebei, Shanxi, Sichuan, and Xizang. However, the reported occurrences in Gansu, Qinghai, Taiwan, and Yunnan are improbable, and material under that name in herbaria from these provinces belongs to other taxa.

For *Taraxacum mongolicum* var. *caninum* and *T. mongolicum* var. *laeve* see the discussion of *T.* sect. *Mongolica*, above.

59. Taraxacum liaotungense Kitagawa, Bot. Mag. (Tokyo) 47: 825. 1933.

辽东蒲公英 liao dong pu gong ying

Taraxacum liaotungense f. *lobulatum* Kitagawa.

Herbs 10–15 cm tall. Petiole ± green, arachnoid at base, winged in most leaves but unwinged in inner ones; leaf blade slightly grayish mid-green with a light green midvein, linear-oblanceolate, 7–10 × 1–1.5 cm, sparsely arachnoid, pinnatifid to pinnatisect; lateral lobes (4 or)5 or 6(or 7) pairs, ± triangular to oblong-triangular, 4–8 mm, sometimes from broad base abruptly narrowed into a lingulate distal part, recurved or subpatent, proximal margin entire, distal margin straight to ± concave and entire or with a single tooth; interlobes sometimes faintly spotted light brownish pink, 3–8 × 2–3 mm, margin entire or with a few unequal teeth or lobules; terminal lobe narrowly triangular to narrowly helmet-shaped or 3-partite, distinctly developed, 1–2.3 × 0.8–1.5 cm, distal margin often dentate or incised, apex subacute to acute. Scapes ?brownish green, subequaling leaves, arachnoid. Capitulum ca. 2.5 cm wide. Involucre 7–8 mm wide, base ± rounded. Outer phyllaries 15–19, mid-green to light green with darker middle part and a gradual transition into a whitish border, ± not imbricate, linear-lanceolate to narrowly lanceolate, outermost ones 6–7 × 1.7–2 mm and ca. 1/2 as long as inner ones, ± appressed, margin sparsely ciliate or glabrous, apex with a blackish purple thick horn to 1.3 mm; inner phyllaries 1–1.1 cm, apex corniculate. Ligules yellow; outer ligules flat, outside striped dark gray. Stigmas dark. Anthers polliniferous; pollen grains irregular in size. Achene pure deep brown, 4.2–5.2 × 1.3–1.4 mm; body tuberculate throughout, apically densely tuberculate-squamulose, ± gradually narrowing into a subconic 0.9–1.2 mm cone; beak 5–8 mm. Pappus yellowish to brownish white, 6–7 mm. Fl. spring. Agamosperm.

● Dry grasslands; below 100–400 m. Liaoning.

60. Taraxacum erythropodium Kitagawa, Rep. Inst. Sci. Res. Manchoukuo 2: 304. 1938.

淡红座蒲公英 dan hong zuo pu gong ying

Herbs 15–25 cm tall. Petiole ± purple, subglabrous at base, unwinged or narrowly winged; leaf blade grayish green with a vivid purple midvein, narrowly oblanceolate, (6–)8–13 × 1–3.5 cm, sparsely arachnoid to glabrescent, usually pinnatisect lobed but outer leaves sometimes undivided; lateral lobes 3 or 4 pairs, narrowly triangular to lingulate-elongated, 0.5–1.5 cm, recurved, proximal margin straight to subsigmoid and entire, distal margin straight to ± concave or sigmoid and entire or with a single minute tooth, apex acute; interlobes ca. 15 × 3–4 mm, margin entire or minutely dentate and with large conspicuous brownish purple spots; terminal lobe narrowly triangular to triangular, (0.8–)1.3–3 × 0.8–3 cm, usually indistinctly 3-partite, basal segments ± patent to recurved and with margin ± entire, terminal segment with distal side of segment margin entire or rarely with small teeth or incisions and apex acute and often narrowly lingulate-elongated. Scapes purple in proximal part, ± equaling leaves, arachnoid but later glabrescent. Capitulum ca. 3 cm wide. Involucre 7–8 mm wide, base ± rounded. Outer phyllaries 15–20, light green with a gradual transition into a whitish green border, ± not imbricate, linear-lanceolate to lanceolate, outermost ones 6–7 × 1.5–2.5 mm and ca. 1/2 as long as inner ones, ± loosely appressed, margin sparsely ciliate, apex with a brownish purple horn to 1.5 mm; inner phyllaries 1.3–1.4 cm, apex flat or corniculate. Ligules yellow; outer ligules flat, outside striped blackish. Stigmas dark. Anthers polliniferous; pollen grains irregular in size. Achene grayish brown, 4.9–5.4 × 1.1–1.3 mm; body densely tuberculate throughout, apically densely tuberculate-squamulose, coarsely spinulose on ridges, very gradually narrowing into a narrowly conic 1.1–1.5 mm cone; beak 5–9 mm. Pappus brownish white, ca. 7 mm. Fl. spring. Agamosperm.

● Roadsides, grasslands; 100–400 m. Jilin, Liaoning.

Taraxacum erythropodium is very close to *T. liaotungense*. Most of the differences are found in achenes (color, thickness, length of cone) and also leaf coloration.

61. Taraxacum coreanum Nakai, Bot. Mag. (Tokyo) 46: 62. 1932.

朝鲜蒲公英 chao xian pu gong ying

Taraxacum pseudoalbidum Kitagawa; *T. pseudoalbidum* var. *lutescens* Kitagawa.

Herbs 20–25 cm tall. Petiole suffused purplish or ± green, whitish brown arachnoid above, ± winged; leaf blade mid-green and often ± suffused purplish, ± linear-oblanceolate, 13–20 × (2–)2.5–3(–5) cm, sparsely arachnoid, deeply pinnatisect; lateral lobes (3 or)4–6, usually linear-deltoid to linear-triangular, patent, margin subentire to minutely dentate in outer leaves but dentate and often lobulate in middle and inner ones; lobules also patent, margin sometimes dentate, apex acute to lingulate; interlobes winged, margin dentate-lobulate or rarely entire; terminal lobe flat rhombic to flat triangular, basal segments ± triangular, acute. Scapes brownish green to purplish, ± equaling leaves, arachnoid below and densely arachnoid-lanate below capitulum. Capitulum 2.5–3.5 cm wide. Involucre light green, 0.9–1.1 cm wide, base narrowly rounded. Outer phyllaries 10–12, light green to green, ± not imbricate, ± lanceolate, narrowly ovate, or sometimes to ovate, outermost ones 7–9 × 2.2–3.6 mm and 1/2–3/5 as long as inner ones, loosely appressed, distinctly veined, border not very distinct, ± membranous, to 0.5 mm wide, and sometimes suffused pink near apex, margin ciliate to sparsely so in apical part, with a dark ca. 1 mm horn near apex; inner phyllaries 1.3–1.6 cm, apex callose to corniculate. Ligules white or very pale whitish yellow; outer ligules outside ± pinkish and on both surfaces striped purplish gray; inner ligules with blackish apical teeth. Stigmas deep grayish green. Anthers polliniferous; pollen grains irregular in size. Achene ± straw-

colored brown to light brown, 5.6–6 × 1.4–1.6 mm; body tuberculate or minutely squamulose below, densely squamulose and spinulose in upper 1/5–1/3, subgradually narrowing into a subcylindric 1–1.4 mm cone; beak 8–9 mm. Pappus yellowish, ca. 7 mm. Fl. late spring and summer. Agamosperm. 2*n* = 32.

Grasslands, roadsides; below 100–500 m. Liaoning [N Korea].

Taraxacum coreanum is also reported from Hebei, Heilongjiang, and Jilin (FRPS 80(2): 35. 1999; Higher Pl. China 11: 775. 2005), but a revision of the material is needed.

62. Taraxacum albomarginatum Kitamura, Acta Phytotax. Geobot. 4: 103. 1935.

白边蒲公英 bai bian pu gong ying

Taraxacum mandshuricum Nakai ex Koidzumi.

Herbs 15–23 cm tall. Petiole pinkish to green with a green to pinkish midvein, arachnoid, winged in outer leaves but narrow in innermost ones; leaf blade deep green, broadly oblanceolate, 10–15 × 3–5 cm, ± arachnoid, pinnatilobed to pinnatisect; lateral lobes usually 3–5, short and broad in outer leaves, triangular to deltoid in middle ones, and linear-triangular in inner ones, ± patent to subrecurved, margin on proximal and distal sides usually dentate; interlobes broad and dentate-lobulate but narrow in inner leaves; terminal lobe broadly flat-triangular or reduced to 3 teeth at apex of almost undivided leaves, margin often minutely dentate, acute and on inner leaves dentate. Scapes brownish green, floccose-arachnoid but densely so below capitulum. Capitulum 3–4 cm wide. Involucre 1.1–1.2 cm wide, base rounded to slightly truncate. Outer phyllaries 11–16, slightly imbricate, ovate, outermost ones 5.5–8(–9) × 3–5 mm and 2/5–1/2 as long as inner ones, appressed, surface with visible but not conspicuous venation, middle part dark green and ca. 1 mm wide, with a ± evident whitish pale green wide border, margin villous-ciliate, flat or minutely corniculate near apex; inner phyllaries 1.4–1.7 cm, callose to flat near apex. Ligules yellow; outer ligules ± flat, outside broadly striped grayish green; inner ligules with grayish apical teeth; floret tube pubescent. Stigmas grayish green. Anthers polliniferous; pollen grains irregular in size. Achene pale grayish straw-colored brown, 3.9–4.1(–4.3) × 0.9–1 mm; body ± subsparsely spinulose above, gradually narrowing into a thin cylindric 0.6–0.7 mm cone; beak 0.9–1.1 cm. Pappus yellowish white, 7–8 mm. Fl. spring. Agamosperm.

Grasslands; ca. 300 m. Liaoning [N Korea].

Taraxacum albomarginatum is a rather marginal species in *T.* sect. *Mongolica* because of its thin, pale, and ± subsparsely spinulose achenes.

63. Taraxacum junpeianum Kitamura, Acta Phytotax. Geobot. 4: 103. 1935.

长春蒲公英 chang chun pu gong ying

Herbs 12–20 cm tall. Petiole reddish, narrow; leaf blade mid-green to deep green with a pale green to purplish midvein, ± oblanceolate, 6–15 × 1.3–2.5 cm, sparsely arachnoid, pinnatisect, sometimes divided to very midvein; lateral lobes 3–5, narrowly triangular to linear-triangular, patent to subrecurved, proximal margin minutely dentate or entire, distal margin usually with a few minute teeth near base; interlobes 2–3(–4) mm wide, margin with several acute filiform teeth or lobules; terminal lobe triangular to 3-partite, margin entire or with 1 or 2 teeth at base of basal segments, apex acute. Scapes brownish green, overtopping leaves, arachnoid below capitulum. Capitulum 2–3 cm wide. Involucre 0.9–1.1 cm wide, base rounded. Outer phyllaries (10–)13–16, green or suffused pinkish, ± not imbricate, ovate, outermost ones (6–)7–9 × (2.3–)3.5–4(–5.5) mm and 1/2–3/5 as long as inner ones, appressed, surface with a distinct venation, with an indistinct paler membranous whitish green border to 1 mm wide, margin subglabrous, corniculate near apex; inner phyllaries 1.3–1.4 cm. Ligules yellow; outer ligules outside striped gray; ligule tube pubescent. Stigmas ± yellow. Anthers polliniferous; pollen irregular in size. Achene reddish brown to light red, (3.4–)3.6–4(–4.2) × 0.7–0.9 mm; body spinulose above, subgradually narrowing into a thin cylindric 0.7–0.8 mm cone, spinules ± erect-patent and acute; beak 8–9 mm. Pappus yellowish white, 5–6 mm. Fl. spring. Agamosperm.

● Grasslands; ca. 300 m. Jilin.

The sectional position of *Taraxacum junpeianum* is rather uncertain. The characters of outer phyllaries point to *T.* sect. *Mongolica*, but achene traits are outside the generally accepted limits of the section. In any case, the character combination is unique, and the name cannot be equated with any related taxon of *T.* sect. *Mongolica* as was done in FRPS (80(2): 44. 1999).

64. Taraxacum siphonanthum X. D. Sun, X. J. Ge, Kirschner & Štěpánek, Folia Geobot. 36: 210. 2001.

管花蒲公英 guan hua pu gong ying

Herbs 10–20 cm tall. Petiole green or suffused pinkish, narrowly winged; leaf blade deep green to slightly grayish dark green, ± oblanceolate, 8–13 × 2.5–3.5 cm, subglabrous to sparsely arachnoid, pinnatifid to pinnatisect; lateral lobes 4–6, triangular to narrowly triangular, patent, margin entire or with a few minute teeth near base of distal side; interlobes short, ca. 5 mm wide, margin entire; terminal lobe triangular to 3-partite, short, margin entire, apex acute. Scapes brownish green, overtopping leaves, arachnoid below capitulum but later often glabrescent. Capitulum 2–3 cm wide. Involucre 0.9–1.1 cm wide, base subconic to ± narrowly rounded. Outer phyllaries 9–12, green with midvein or middle part blackish green, not imbricate, ovate to narrowly ovate, outermost ones 5–7.5 × 2.2–3 mm and 2/5–1/2 as long as inner ones, ± appressed, surface with a distinct venation, border paler, membranous-whitish green, and usually 0.4–0.6 mm wide, margin glabrous or sparsely ciliate, near apex corniculate or with a horn; inner phyllaries 1.4–1.7 cm, apex corniculate or with a horn. Ligules deep yellow; outer ligules completely tubular, not striped; inner ligules completely tubular, with darker apical teeth; ligule tube pubescent. Stigmas pale brownish yellow, not exserted. Anthers polliniferous; pollen grains irregular in size. Achene light grayish to pale brownish, 5.2–5.7 × ca. 1 mm; body ± smooth below, subdensely spinulose above, subgradually narrowing into a thin cylindric ca. 1 mm cone, spinules long, ± erect-patent, and acute; beak 8–10 mm. Pappus white, 7–8 mm. Fl. late spring. Agamosperm.

● Open woodlands with *Populus davidiana*, *Betula mongolica*, and *Spiraea* spp.; 800–1200 m. Nei Mongol.

In regards to structural differences, *Taraxacum siphonanthum* does not deviate from the pattern observed in other sections of the genus, and its recognition as a separate genus is not justified.

The names *"Neo-taraxacum"* and *"N. siphonanthum"* (Y. R. Ling & X. D. Sun, Bull. Bot. Res., Harbin 21: 175–176. 2001), the latter intended as a new combination based on *T. siphonanthum*, were not validly published.

65. Taraxacum aurantiacum Dahlstedt, Acta Horti Berg. 4(2): 9. 1907.

橘黄蒲公英 ju huang pu gong ying

Herbs 8–20 cm tall. Petiole purple on midvein or green, winged to narrowly winged in outer and middle leaves and unwinged in inner ones, base densely arachnoid; leaf blade glaucous-green and with a purplish or green midvein, narrowly elliptic to narrowly oblanceolate, 6–12 × 1.5–2.5 cm, arachnoid, ± pinnatisect or rarely outer leaves undivided; lateral lobes 3 or 4 pairs, triangular to narrowly triangular, recurved to subrecurved but distal part sometimes patent, apex acute, proximal margin entire or with a few teeth, distal margin usually sigmoid to ± straight and most often entire but sometimes with 1 or 2 acute teeth; interlobes spotted dark brownish purple, 3–5 × 3–4 mm, margin irregularly dentate; terminal lobe narrowly triangular to lingulate-elongated, distal margin concave or sigmoid and usually entire, apex acute. Scapes purplish green, equaling to overtopping leaves, densely arachnoid to almost tomentose. Capitulum 3–4(–5) cm wide. Involucre light olivaceous green, ca. 1 cm wide, base ± rounded. Outer phyllaries 13–17, light olivaceous green, ± not imbricate, narrowly lanceolate to linear-lanceolate, outermost ones 6–7 × (1.5–)2–3 mm and ca. 2/3 as long as inner ones, erect but distal part often erect-arcuate, distinctly veined, border not distinct, suffused brownish purple or membranous, and 0.1–0.3 mm wide, margin ± long ciliate, apex with purplish brown horn; inner phyllaries 1.1–1.3 cm, apex dark corniculate. Ligules orange; outer ligules flat, outside striped faintly brownish purple; inner ligules with dark brownish purple apical teeth. Stigmas dark (brownish) purplish. Anthers without pollen. Achene light grayish straw-colored brown, 4.3–5.1 × 1.2–1.5 mm; body densely squamulose throughout, ± abruptly narrowing into a cylindric to subcylindric (0.7–)0.9–1.2(–1.4) mm cone; beak 5–8 mm. Pappus whitish, ca. 7 mm. Fl. summer. Agamosperm.

● Alpine meadows; ca. 3500 m. S Gansu, W Sichuan.

Taraxacum aurantiacum probably also occurs in SE Xizang as the localities in Sichuan are very close to the Xizang border. This taxon was entirely overlooked as a member of the Chinese flora since its description. The report of *T. aurantiacum* from Afghanistan (Soest in K. H. Rechinger, Fl. Iranica 122: 244. 1977) is erroneous because the voucher specimens and the published description belong to another taxon.

66. Taraxacum variegatum Kitagawa, Rep. Inst. Sci. Res. Manchoukuo 2: 302. 1938.

斑叶蒲公英 ban ye pu gong ying

Herbs 12–20 cm tall. Petiole green, sparsely arachnoid, narrowly winged; leaf blade deep green, ± broadly oblanceolate, 9–20 × (2–)3–6 cm, sparsely arachnoid, pinnatisect; lateral lobes 4–6 pairs, from a broadly triangular base narrowing into linear-triangular distal part or narrowly triangular, ± patent, proximal margin ± entire or dentate, distal margin usually conspicuously filiform dentate, apex acute; interlobes (and lobe bases) with conspicuous brownish purple spot, margin filiform dentate to lobulate; terminal lobe 3-partite, basal segments ± patent and apex acute, terminal segment triangular to narrowly triangular, margin with a few teeth at base or ± entire, and apex acute. Scapes brownish green, subequaling leaves, sparsely arachnoid to arachnoid. Capitulum 4.5–5.5 cm wide. Involucre 1.1–1.4 cm wide, base rounded. Outer phyllaries 12–15, mid-green with darker midvein and margin and apical part usually suffused purplish, ± not imbricate, ± broadly lanceolate to rarely narrowly lanceolate or ± ovate, outermost ones (8–)9–11 × (2.5–)3–4 mm, erect, with prominent venation, paler border not developed, margin glabrous, apex with 1–2.5 mm thick horn; inner phyllaries 1.6–1.9 cm, apex corniculate. Ligules yellow; outer ligules ± flat, outside striped blackish; inner ligule with ± yellow apical teeth. Stigmas dirty yellow to light grayish yellow. Anthers polliniferous; pollen grains irregular in size. Achene light (yellowish) straw-colored brown, (4–)4.1–4.4(–4.6) × 1.1–1.3 mm; body densely spinulose-squamulose throughout or only in upper ca. 1/2 and then other parts ± rugose, ± abruptly narrowing into a subconic (0.7–)0.8–0.9(–1) × 0.3–0.4 mm cone, spinules or squamules short; beak 8–9.5 mm, thin. Pappus yellowish white, 5–6 mm. Fl. spring. Agamosperm.

● Grasslands, roadsides; below 100–400 m. Jilin, Liaoning.

Taraxacum variegatum as treated in FRPS (80(2): 36. 1999, incl. *T. erythropodium*, here treated separately) is also reported from Beijing, Hebei, Heilongjiang, and Nei Mongol, but the material has not been revised.

67. Taraxacum lamprolepis Kitagawa, Rep. Inst. Sci. Res. Manchoukuo 2: 306. 1938.

光苞蒲公英 guang bao pu gong ying

Herbs 7–18 cm tall. Petiole purplish, narrowly winged or (in inner leaves) unwinged; leaf blade mid-green, narrowly oblong, 7–15(–18) × 0.8–3.5 cm, sparsely arachnoid, pinnatisect; lateral lobes 4–6(or 7) pairs, narrowly triangular, linear-triangular, or seldom ± linear, usually 9–17 × 2.5–7 mm, recurved, proximal margin straight and usually entire, distal margin ± straight and entire or with 1–3 teeth; interlobes narrow, margin most often remotely dentate; terminal lobe narrowly triangular-sagittate or ± triangular, usually elongated, with 1 or 2 irregular lobules or incisions, apex acute. Scapes purplish green, equaling or ± overtopping leaves, sparsely arachnoid. Capitulum 3–4 cm wide. Involucre 8–10 mm wide, base ± narrowly rounded. Outer phyllaries 8–12, dark or deep green but sometimes light green or blackish green, ± not imbricate, broadly lanceolate to ovate, outermost ones (6–)7–9(–10) × 2.5–4 mm and 1/2–3/5 as long as inner ones, ± loosely appressed but later often erect-patent, venation often prominent and midvein dark, border paler, light green to whitish green but often suffused purplish, 0.3–1 mm wide, membranous, and with a gradual transition to darker middle part, margin sparsely ciliate near apex, apex ± flat in early capitula but with a thick horn in later ones; inner phyllaries 1.4–1.7 cm, apex ± flat. Ligules yellow; outer ligules flat, outside striped dark gray. Stigmas deep dirty yellow to grayish yellow. Anthers polliniferous; pollen grains irregular

in size. Achene ± light straw-colored brown, 3.7–4.2 × 1.2–1.3 mm; body densely spinulose in upper ca. 1/3, abruptly narrowing into a conic to subcylindric 0.5–0.8 mm cone, spinules short, thin, erect-patent to sometimes patent, and acute; beak 8–9 mm, thin. Pappus yellowish white, 6–8 mm. Fl. spring. Agamosperm.

● Hill slopes, fields; 100–300 m. Jilin.

Taraxacum lamprolepis was described from Jilin. FRPS (80(2): 19. 1999) reported it from Heilongjiang, Liaoning, and E Nei Mongol, but re-examination of the material is needed.

In the original description *Taraxacum lamprolepis* is compared with *T. sinicum*, but in FRPS (80(2). 19. 1999) *T. lamprolepis* is included in *T.* sect. *Sinensia*, corresponding in this conception to our *T.* sect. *Stenoloba*. Neither the achene features nor outer phyllaries point to *T.* sect. *Stenoloba*. The large thick horns developing on outer phyllaries of a few young flowering capitula, reticulate venation of outer phyllaries, relatively thick achenes, and outer phyllary shape all place this taxon in *T.* sect. *Mongolica*.

9. Taraxacum sect. Turrita Kirschner & Štěpánek, sect. nov.

塔状蒲公英组 ta zhuang pu gong ying zu

Type: *Taraxacum turritum* Kirschner & Štěpánek.

Plantae agamospermae subserotinae, plerumque altae, turritae, foliis erectis, rectis, subcoriaceis, pinnatisectis, lobis lateralibus et lobo terminali acuminatis, petiolis anguste alatis, capitulis magnis, phyllariis involucralibus exterioribus numerosis (15 ad 25), angustis, lineari-lanceolatis usque lanceolatis, suberectis usque arcuato-patentibus, olivaceo-viridibus, anguste indistincte marginatis, obscure callosis vel corniculatis, ligulis luteis, tubo flosculorum pubescente, acheniis pallide stramineo-brunneis vel pallide olivaceo-brunneis, longissimis, (4–)5–6.1 mm longis, 1–1.3 mm latis, corpore superne subsparse usque dense spinuloso-squamuloso, sensim vel subabrupte in pyramidem angustam subcylindricam (1–)1.2–2.2 mm longam transiente, rostro 0.8–1.2 cm, pappo albido-lutescente 7–8 mm longo.

Plants usually tall. Leaves erect, straight, subleathery; petiole usually narrowly winged; leaf blade narrow, pinnatisect; lateral and terminal lobes usually acuminate at apex. Capitulum large. Outer phyllaries 15–25, linear-lanceolate to lanceolate, narrow, from suberect to arcuate-patent (of almost evenly "echinate" appearance), olivaceous green, indistinctly narrowly bordered, apex dark callose to less often corniculate. Ligules yellow; floret tube pubescent. Achene light grayish straw-colored brown to light olivaceous brown, (4–)5–6.1 × 1–1.3 mm; body subsparsely to densely spinulose and/or squamulose in upper ca. 1/3, gradually to subabruptly narrowing into a ± thin subcylindric (1–)1.2–2.2 mm cone; beak 0.8–1.2 cm, thin. Pappus yellowish white to light brownish white, 7–8 mm. Agamosperms.

About six species: C Asia to China; three species (all endemic) in China.

1a. Pollen absent ..... 68. *T. turritum*
1b. Pollen present.
2a. Achene 5.3–5.6 mm, cone 1.3–1.6 mm ..... 69. *T. celsum*
2b. Achene 4.2–4.4 mm, cone ca. 1 mm ..... 70. *T. orientale*

68. Taraxacum turritum Kirschner & Štěpánek, sp. nov.

塔状蒲公英 ta zhuang pu gong ying

Type: China. Yunnan: "Zhongdian [中甸] Plateau (west), a path to Tian Shi Lake, *Abies* forest and alpine meadows," Jun 1995, *A. J. Richards*, cultivated as JK 4056 (holotype, PRA; isotypes, PRA).

Paratypes: China. Yunnan: *ibidem*, cultivated as JK 4052, JK 4053, JK 4054, JK 4055, JK 4058, JK 4059, JK 4061, JK 4062, JK 4063 (PRA); "Zhongdian Co. [中甸县], NW margin of Zhongdian Plateau," 23 May 1999, *R. Businský & L. Businská s.n.*, cultivated as JŠ 7430, JŠ 7436, JŠ 7448 (PRA); "Zhongdian [中甸] Plateau (north), Napa Hai [纳帕海], meadows 7 km NW of the pass," Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4069, JK 4073 (PRA); "Zhongdian [中甸] Plateau (north), Napa Hai [纳帕海], road out of the plateau," Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4064 (PRA); "South end of Zhongdian [中甸] Plateau, ca. 45 km S of Zhongdian," Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4038, JK 4043 (PRA).

Plantae agamospermae, robustae, foliis ± subcoriaceis, plerumque pinnatisectis, lobis lateralibus numerosis, lineari-triangularibus vel linearibus, lobo terminali acuminato, phyllariis involucralibus exterioribus 18 ad 20, anguste lanceolatis vel lineari-lanceolatis, erecto-arcuatis usque arcuato-patentibus, ecorniculatis, stigmatibus luteo-viridibus, antheris polline carentibus, acheniis griseo-stramineis, eximie longis, superne squamuloso-spinulosis, in pyramidem angustam subcylindricam 1–2.2 mm longam ± sensim abeuntibus.

Herbs 15–22 cm tall, usually robust. Petiole pinkish, broadly to narrowly winged; leaf blade light mid-green, ± oblanceolate to linear-oblanceolate, 11–22 × 2–3.5 cm, ± subleathery, sparsely to ± densely arachnoid, usually pinnatisect, midvein usually pinkish near base otherwise pale green; lateral lobes 6 or 7(–9), to 1.8 cm, from ca. 0.8 cm wide at base narrowing into linear or linear-triangular acute distal part, usually ± patent, proximal margin ± straight and entire, distal margin concave and usually with a distinct basal lobule and/or a few teeth; interlobes 3–5 mm wide, margin sparsely dentate; terminal lobe ± narrowly triangular, 1.5–2.5 × ca. 1.5 cm, basal segments patent to subrecurved or ± curved upward, terminal with distal margin concave or straight and usually entire and apex acuminate. Scapes light green but light pinkish at base, ± equaling

leaves, ± densely arachnoid. Capitulum 3.5–4.5 cm wide. Involucre 8–10 mm wide, base broadly obconic. Outer phyllaries 18–20, dark brownish green, narrowly lanceolate to linear-lanceolate, outermost ones 7–9 × 2–3 mm and 2/3–4/5 as long as inner ones, variously erect-arcuate to arcuate-patent but ± patent after anthesis, border paler membranous and 0.1–0.2 mm wide, margin sparsely ciliate and often remotely serrulate, apex dark callose; inner phyllaries 1.2–1.3 cm, apex ± flat. Ligules deep yellow; outer ligules ± flat, outside striped indistinctly grayish green; inner ligules with yellow apical teeth. Stigmas grayish yellowish green. Anthers without pollen. Achene grayish straw-colored brown, (4–)5.3–6.1 × 1–1.2 mm; body ± densely squamulose and spinulose in upper ca. 1/3, ± gradually narrowing into a thin subcylindric (1–)1.5–2.2 mm cone, spinules curved upward; beak 1–1.3 cm. Pappus brownish white, ca. 7 mm. Fl. late spring. Agamosperm.

● Grazed alpine meadows, margins of *Abies* forests; 3200–4300 m. NW Yunnan.

69. Taraxacum celsum Kirschner & Štěpánek, **sp. nov.**

高茎蒲公英 gao jing pu gong ying

Type: China. Sichuan: "Vallis fluminis Gar Qu [甘孜区]," 12 Oct 2004, *P. Sekerka*, *P. Hanzelka & I. Bulánková 04/70*, cultivated as JŠ 7965 (holotype, PRA; isotypes, PRA).

Plantae agamospermae altae, foliis erectis subcoriaceis pinnatisectis, lobis lateralibus plerumque sursum curvatis, parte distali lingulatis, acutis, lobo terminali vulgo mucronulato, scapis dense araneosis, calathiis usque ad 5 cm latis, saturate luteis, phyllariis involucralibus exterioribus 20 ad 25, lanceolatis vel anguste lanceolatis, phyllariis interioribus fere aequilongis, apice arcuatis usque arcuato-recurvatis, callosis usque cornutis, stigmatibus luteo-viridibus, antheris polliniferis, acheniis griseo-stramineis, eximie longis, superne distincte spinulosis, in pyramidem subcylindricam 1.3–1.6 mm longam subabrupte abeuntibus.

Herbs 25–35 cm tall, robust. Petiole purple, broadly winged in outer leaves but almost unwinged in inner ones; leaf blade light bright green and usually with a pale grayish pink midvein, ± narrowly oblanceolate to linear-lanceolate, 15–25 × 3.5–4.5 cm, subleathery, sparsely to ± densely arachnoid, pinnatisect; lateral lobes 4 or 5(or 6), ca. 2 cm, from ca. 1 cm wide base abruptly narrowing into a lingulate acute distal part, usually conspicuously pointing upward but less often ± patent, proximal margin ± straight, distal margin sigmoid, dentate, and incised; interlobes to 2 cm, margin sparsely dentate, teeth long and narrow; terminal lobe ± broadly triangular to deltoid, 1.5–2(–3.5) × 2–3.5 cm, basal segments patent to curved upward, terminal segment with distal margin concave and entire and apex acute and submucronate. Scapes light green but purplish at base, overtopping leaves, densely arachnoid. Capitulum to 5 cm wide. Involucre 1–1.2 cm wide, base broadly obconic. Outer phyllaries 20–25, light to deep olivaceous green, lanceolate to narrowly lanceolate, outermost ones 9–13 × 3.5–4.5 mm and often almost as long as inner ones, variously arcuate-recurved, paler whitish border 0.1–0.2 mm wide, margin densely ciliate but later glabrescent, apex callose to horned with horn to 1.5 mm; inner phyllaries ca. 1.3 cm, apex ± corniculate. Ligules deep yellow; outer ligules ± flat, outside striped light grayish pink; inner ligules with reddish or yellow apical teeth. Stigmas greenish dirty yellow. Anthers polliniferous, striped brownish red on edges; pollen grains irregular in size. Achene grayish straw-colored brown, 5.3–5.6 × 1–1.3 mm; body ± densely spinulose in upper ca. 1/3, subabruptly narrowing into a subcylindric 1.3–1.6 mm cone, spinules long, thin, and ± suberect; beak ca. 1 cm. Pappus dirty white, 7–8 mm. Fl. late spring. Agamosperm.

● Moist alpine meadows; ca. 3500 m. W Sichuan.

70. Taraxacum orientale Kirschner & Štěpánek, **sp. nov.**

东方蒲公英 dong fang pu gong ying

Type: China. Sichuan: "Opp. Dawu [道孚]: ad ripam dextram fluminis Da Qu," 1 Jun 1992, *L. Businská & R. Businský 2*, cultivated as JŠ 5126 (holotype, PRA; isotypes, PRA).

Plantae agamospermae, mediocres, foliis pinnatilobis usque pinnatisectis, lobis lateralibus triangularibus, lobo terminali anguste triangulari, petiolis anguste alatis, phyllariis involucralibus exterioribus 15 ad 19, lanceolatis usque anguste lanceolatis, suberecto-arcuatis usque arcuato-recurvatis, immarginatis, ecorniculatis, stigmatibus luteo-viridibus, antheris polliniferis, acheniis griseo-stramineis, 4.2–4.4 mm longis, corpore superne dense spinuloso, in pyramidem ± cylindricam ca. 1 mm longam ± abrupte transiente.

Herbs 15–25 cm tall, medium-sized. Petiole dark purple, narrowly winged; leaf blade light green, linear-oblong to ± narrowly oblanceolate, 8–20 × 2–4 cm, ± subleathery, sparsely arachnoid, pinnatilobed on outer leaves to pinnatisect in middle ones, midvein usually brownish purple but distally often light green; lateral lobes (3–)5–7, triangular and distally ± abruptly narrowing into a narrow acute apex, small, subrecurved or less often ± patent, proximal margin straight and entire, distal margin sigmoid and usually entire but sometimes dentate; interlobes short and broad, margin usually entire; terminal lobe ± narrowly triangular, (1–)1.5–2.3(–3.5) × 1–1.5 cm, basal segments patent to subrecurved and apex acuminate, terminal segment with distal margin sigmoid and entire or with a few asymmetric teeth and apex acute to acuminate. Scapes light green but later brownish, often pinkish at base, overtopping leaves, arachnoid but glabrescent. Capitulum ca. 3 cm wide. Involucre 8–10 mm wide, base broadly obconic to flat. Outer phyllaries 15–19, dark olivaceous green but later adaxially often brownish purple, lanceolate to narrowly lanceolate, outermost ones 6–9 × 2–3 mm and 2/5–1/2 as long as inner ones, of various posture from suberect-arcuate to arcuate-recurved, paler border indistinct, margin glabrous, apex often callose; inner phyllaries 1.2–1.3 cm. Ligules deep yellow; outer ligules ± flat, outside striped purplish grayish brown; inner ligules with reddish or yellow apical teeth. Stigmas yellowish green. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 4.2–4.4 × 1–1.2 mm; body densely spinulose in upper ca. 1/3, ± abruptly narrowing into a thin ± cylindric ca. 1 mm cone, spinules ± long; beak 8–9 mm. Pappus ± white, ca. 7 mm. Fl. late spring. Agamosperm.

● Mountain meadows; 3100–3300 m. W Sichuan.

10. Taraxacum sect. **Qaisera** Abedin, Pakistan J. Bot. 39: 1427. 2007.

乌兹别克斯坦蒲公英组 wu zi bie ke si tan pu gong ying zu

Plants medium-sized. Leaves light green to deep green, arachnoid, not thickened; petiole usually purplish or pinkish, usually broadly to narrowly winged but in inner leaves sometimes unwinged; leaf blade usually pinnatisect; lateral lobes usually triangular, subrecurved. Outer phyllaries usually 13–19, ovate, broadly ovate, or sometimes ovate-lanceolate, usually appressed, loosely appressed erect, or ± erect-patent, venation distinct or not clearly visible, border narrow to broad, apex usually flat or sometimes corniculate. Ligules yellow; ligule tube pubescent with straight hairs. Achene grayish straw-colored brown, 3.6–5 × 0.9–1.2 mm; body often with prominent lateral ridges (narrowly winged), densely shortly spinulose above, abruptly to almost gradually narrowing into a conic to subcylindric 0.4–0.8(–1.1) mm cone; beak usually 6–10 mm, thin. Pappus white or yellowish white.

About 35 species: centered in C Asia; 20 species (19 endemic) in China.

The sectional type, *Taraxacum qaiseri* Abedin from Pakistan, is based on a single, imperfectly prepared and preserved specimen, and it is difficult to interpret the section on this basis. The members of *T.* sect. *Qaisera*, as understood here, are superficially similar to those of *T.* sect. *Taraxacum* but have outer phyllaries very broad, usually ovate to broadly ovate, appressed to erect-patent, and sometimes even imbricate; petioles usually broadly winged; and ligule tube with straight hairs. *Taraxacum* sect. *Qaisera* is comprised of mostly agamospermous hybridogenous species of unknown parentage. We can hypothesize on the basis of morphological similarity that one of the parental taxa may belong to *T.* sect. *Calanthodia*.

Taraxacum ecornutum Kovalevskaja (Bot. Mater. Gerb. Inst. Bot. Akad. Nauk Uzbeksk. S.S.R. 17: 14. 1962) was reported to occur in China (FRPS 80(2): 72. 1999). It is a taxon undoubtedly belonging to *T.* sect. *Qaisera*, but we failed to find convincing material supporting this record.

Taraxacum pseudoalpinum Schischkin (Fl. Kazakhst. 9: 437, 571. 1966) and *T. pseudoroseum* Schischkin (Fl. URSS 29: 528, 744. 1964), described from C Tian Shan, belong to *T.* sect. *Qaisera*. They were reported as members of the Chinese flora (FRPS 80(2): 71–72. 1999), but we failed to find any specimens of these two taxa from China.

1a. Pollen absent.
2a. Stigmas yellow ..... 75. *T. florum*
2b. Stigmas discolored ..... 83. *T. aeneum*
1b. Pollen present.
3a. Pollen grains regular in size ..... 86. *T. xinyuanicum*
3b. Pollen grains irregular in size.
4a. Outer phyllaries with thick horns ..... 90. *T. brevicorniculatum* (see also key to *T.* sect. *Ceratoidea*)
4b. Outer phyllaries flat to ± minutely corniculate.
5a. Outer phyllaries patent, arcuate-patent, erect-patent or subrecurved, not appressed to erect.
6a. Outer phyllaries imbricate; leaves ± glabrous ..... 79. *T. tonsum*
6b. Outer phyllaries not imbricate; leaves sparsely arachnoid.
7a. Outer phyllaries with a broad paler border to 2 mm wide ..... 71. *T. horizontale*
7b. Outer phyllaries with a narrow pale border 0.1–0.2 mm wide.
8a. Achene cone subcylindric, 0.8–0.9 mm ..... 72. *T. perplexans*
8b. Achene cone ± conic, 0.5–0.7 mm ..... 80. *T. damnabile*
5b. Outer phyllaries appressed, loosely appressed, or erect.
9a. Outer phyllaries not imbricate.
10a. Achene body abruptly narrowing into a ca. 0.4 mm cone ..... 77. *T. icterinum*
10b. Achene body gradually narrowing into a 0.8–1.1 mm cone.
11a. Outer phyllaries 8–9 mm ..... 84. *T. simulans*
11b. Outer phyllaries 4–7 mm.
12a. Stigmas yellow ..... 81. *T. adglabrum*
12b. Stigmas light discolored ..... 88. *T. puberulum*
9b. Outer phyllaries imbricate.
13a. Stigmas yellow ..... 79. *T. tonsum*
13b. Stigmas discolored.
14a. Involucre base obconic ..... 78. *T. cyathiforme*
14b. Involucre base rounded to truncate.
15a. Outer phyllaries 6–8 mm wide ..... 82. *T. subcontristans*
15b. Outer phyllaries 3–5 mm wide.
16a. Paler border to outer phyllaries 0.5–1 mm wide.
17a. Achene body subabruptly narrowing into a conic 0.7–0.9 mm cone; beak ca. 6 mm; stigmas blackish green ..... 87. *T. potaninii*
17b. Achene body ± gradually narrowing into a subcylindric 0.8–1 mm cone; beak ca. 9 mm; stigmas yellowish green ..... 89. *T. protractifolium*
16b. Paler border to outer phyllaries not developed or 0.1–0.2 mm wide.

18a. Achene cone 0.4–0.6 mm.
19a. Achene body 1–1.2 mm thick, lateral ridges prominent and with large remote spinules; distal margin of leaf lateral lobes dentate; leaf lobes not approximate ..... 73. *T. imbricatius*
19b. Achene body ca. 0.9 mm thick, lateral ridges not prominent and with ± dense, medium-sized spinules; distal margin of leaf lateral lobes entire; leaf lobes approximate ..... 76. *T. abbreviatulum*
18b. Achene cone 0.8–1.1 mm.
20a. Achene 4.3–4.5 mm, cone 0.9–1.1 mm; outer phyllaries 14–17; leaf blade interlobes usually conspicuously spotted purplish brown ..... 74. *T. pseudocalanthodium*
20b. Achene 3.8–4 mm, cone 0.8–0.9 mm; outer phyllaries 17–20; leaf blade interlobes not spotted or faintly so ..... 85. *T. subcalanthodium*

71. Taraxacum horizontale Kirschner & Štěpánek, **sp. nov.**

平枝蒲公英 ping zhi pu gong ying

Type: China. Xinjiang: "Tian Shan [天山], pars montium Borohoro Shan [婆罗科努山], situ occid. a lacu Sayram Hu [塞里木湖]," 2109 m, 29 Sep 2004, *P. Sekerka, P. Hanzelka & I. Bulánková 04/27*, cultivated as JŠ 7957 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae agamospermae, mediocres, foliis laete viridibus, pinnatisectis, lobis lateralibus 4 vel 5 utrinque, interlobiis maculatis, lobo terminali triangulari vel late triangulari, petiolis perlate alatis, phyllariis involucralibus exterioribus 15 ad 20, pallide viridibus, lanceolatis vel ovato-lanceolatis, irregulariter patentibus vel erecto-patentibus usque arcuato-patentibus, stigmatibus sordide luteo-virescentibus, antheris polliniferis, acheniis plerumque 3.6–3.8 mm longis et conspicue latis, superne dense spinulosis, in pyramidem conicam ca. 0.5 mm longam subabrupte abeuntibus.

Herbs 15–20 cm tall. Petiole light green to faintly pinkish, very broadly winged; leaf blade yellowish green and usually with a faintly brownish purple midvein, oblanceolate, 11–20 × 4–5.5 cm, sparsely arachnoid, regularly pinnatisect; lateral lobes 4 or 5 pairs, ± narrowly triangular, to 2.5 × 1.5 cm, patent to subrecurved, distal margin slightly convex or ± sigmoid and usually entire, apex acute; interlobes evident, with purplish brown spots, margin dentate; terminal lobe triangular to broadly triangular, 1.5–2.5 × ca. 1.5 cm, margin entire, apex subacute. Scapes light brownish green, subequaling leaves, usually densely arachnoid. Capitulum ca. 4.5 cm wide. Involucre 1–1.2 cm wide, base ± rounded. Outer phyllaries 15–20, abaxially light green suffused pinkish and with a slightly darker middle part, adaxially slightly glaucous-green, ± not imbricate, lanceolate to ovate-lanceolate, outermost ones 10–12 × (3–)4–5 mm and ca. 3/4 as long as inner ones, ± irregularly patent, erect-patent, or arcuate-patent, laterally with gradual transition into a whitish green border to 2 mm wide and a membranous fringe 0.2–0.3 mm wide, margin sparsely ciliate, apex ± flat; inner phyllaries ca. 1.5 cm. Ligules deep yellow; outer ligules ± flat, outside striped purplish gray; inner ligules with grayish purple teeth at apex; ligule tube pubescent. Stigmas grayish greenish yellow. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 3.6–3.8 × 1.2–1.4 mm; body subdensely spinulose-squamulose above, subabruptly narrowing into a conic ca. 0.5 mm cone; beak 8–10 mm. Pappus dirty white, 6–7 mm. Fl. late spring. Agamosperm.

● Montane meadows and pastures; 2000–2200 m. W Xinjiang.

72. Taraxacum perplexans Kirschner & Štěpánek, **sp. nov.**

惊喜蒲公英 jing xi pu gong ying

Type: China. Xinjiang: "montes Altaj [阿尔泰山], situ boreal. a Qinghe [青河]," 1557 m, 23 Sep 2004, *P. Sekerka, P. Hanzelka & I. Bulánková 04/06*, cultivated as JŠ 7959 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Xinjiang: *ibidem*, *P. Sekerka, P. Hanzelka & I. Bulánková 04/06*, cultivated as JŠ 7958 (PRA); Korla Xian [库尔勒县], May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7383 (PRA); "Tian Shan [天山], Wang Mu Miao monastery near Tian Chi lake [天池湖]" [probably Xiwang Muzumiao 西王母祖庙], 1950 m, 2 Oct 2003, *P. Sekerka 03/2*, cultivated as JK 4947 (PRA).

Plantae agamospermae, mediocres vel subrobustae, laminis foliorum saturate viridibus, saepissime anguste oblanceolatis, pinnatisectis, lobis lateralibus (4 ad)6 vel 7 utrinque, anguste triangularibus patentibusve, interlobiis purpureo-marginatis, petiolis foliorum exteriorum late alatis, phyllariis involucralibus exterioribus 17 ad 20, lanceolatis vel ovato-lanceolatis, irregulariter patentibus, stigmatibus luteo-viridibus, antheris polliniferis, acheniis 3.9–4.1 mm longis, superne dense squamuloso-spinulosis, in pyramidem subcylindricam 0.8–0.9 mm longam abrupte abeuntibus.

Herbs 15–22 cm tall. Petiole light purplish green, broadly winged in outer leaves but narrowly so in middle ones; leaf blade deep green, narrowly elliptic to narrowly oblanceolate, 10–23 × 3–5.5 cm, ± sparsely arachnoid, pinnatisect, midvein adaxially brownish purple throughout; lateral lobes (4–)6 or 7 pairs, ± narrowly triangular, 1–2.5 × 1–1.5 cm, ± patent but sometimes slightly bent upward, distal margin of upper lobes ± entire but denticulate in lower ones, apex acute; interlobes evident, bordered purplish brown and with raised denticulate margin; terminal lobe triangular to broadly triangular, 1–3.5 × 1.4–3 cm, margin entire or with 1 or 2 asymmetric incisions, apex subacute. Scapes purplish green, ± equaling leaves, usually

densely arachnoid. Capitulum ca. 4 cm wide. Involucre 1–1.2 cm wide, base ± truncate. Outer phyllaries 17–20, abaxially light olivaceous green suffused brownish pink near apex, adaxially pale grayish green, ± not imbricate, ± lanceolate to ovate-lanceolate, outermost ones 9–13 × 3.5–5.5 mm and ca. 2/3 as long as inner ones, ± irregularly patent to sometimes arcuate-patent, with whitish membranous 0.1–0.2 mm wide border, margin sparsely ciliate, apex ± flat; inner phyllaries ca. 1.3 cm. Ligules deep yellow; outer ligules ± flat, outside striped purplish or greenish; inner ligules with yellow teeth at apex; ligule tube pubescent. Stigmas greenish yellow, abaxially dark pubescent. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 3.9–4.1 × ca. 1.1 mm; body ± densely spinulose-squamulose above, ± abruptly narrowing into a subcylindric 0.8–0.9 mm cone; beak ca. 1 cm. Pappus ± white, 6–7 mm. Fl. late spring. Agamosperm.

● Submontane steppe meadows and pastures; ca. 1500 m. Xinjiang.

73. Taraxacum imbricatius Kirschner & Štěpánek, **sp. nov.**

叠鳞蒲公英 die lin pu gong ying

Type: China. Xinjiang: “Montes Altaj [阿尔泰山], situ boreal. a Qinghe [青河],” 1557 m, 23 Sep 2004, *P. Sekerka, P. Hanzelka & I. Bulánková 04/06*, cultivated as JŠ 7963 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae agamospermae, foliis laete viridibus, anguste ellipticis vel ellipticis, pinnatisectis, lobis lateralibus 4 ad 6 utrinque, subrecurvis usque hamato-recurvis, petiolis late usque anguste alatis, phyllariis involucralibus exterioribus 18 ad 21, saturate olivaceo-viridibus, imbricatis, ovatis usque late ovatis, laxe adpressis, stigmatibus luteo-viridibus, antheris polliniferis, acheniis 3.7–3.9 mm longis, superne dense spinulosis, in pyramidem conicam 0.5–0.6 mm longam abrupte abeuntibus.

Herbs 14–18 cm tall. Petiole light purplish green, broadly winged in outer leaves, narrowly so in middle ones, arachnoid at base; leaf blade light green, ± narrowly elliptic to elliptic, 8–16 × 2.5–4.5 cm, arachnoid, pinnatisect, midvein adaxially brownish purple in proximal part; lateral lobes 4–6 pairs, ± triangular to narrowly deltoid-triangular, to 2 × 1.5 cm, subrecurved to hamate-recurved, distal margin convex and entire or with 1 or 2 teeth, proximal margin straight to concave and entire or with 1 large tooth, apex acute; interlobes short, margin raised and dentate; terminal lobe triangular to broadly triangular, 1–2.5 × 1.5–3 cm, margin usually entire, apex subacute. Scapes green but pinkish at base, ± equaling leaves, usually densely arachnoid. Capitulum ca. 3.5 cm wide. Involucre ca. 1 cm wide, base ± truncate. Outer phyllaries 18–21, deep abaxially olivaceous green suffused brownish pink near apex, ± imbricate, ± ovate to broadly ovate (inner of them to ± lanceolate), outermost ones 6–8 × 3–4.3 mm and 1/2–2/3 as long as inner ones, loosely appressed, with an indistinct dirty membranous 0.1–0.2 mm wide border, margin subglabrous to sparsely ciliate, apex ± flat; inner phyllaries 1.2–1.3 cm. Ligules deep yellow; outer ligules ± flat, outside striped purplish grayish brown; inner ligules with yellow teeth at apex; ligule tube pubescent. Stigmas greenish yellow, abaxially dark pubescent. Anthers polliniferous; pollen grains irregular in size. Achene light grayish olivaceous brown, 3.7–3.9 × 1–1.2 mm, with distinct lateral and ventral ridges; body densely spinulose in upper ca. 1/3, ± abruptly narrowing into a conic 0.5–0.6 × ca. 0.3 mm cone, spinules thin and often slightly recurved; beak ca. 1.1 cm. Pappus dirty white, 6–7 mm. Fl. late spring. Agamosperm.

● Submontane steppe meadows and pastures; ca. 1500 m. N Xinjiang.

74. Taraxacum pseudocalanthodium Kirschner & Štěpánek, **sp. nov.**

假大斗蒲公英 jia da dou pu gong ying

Type: China. Xinjiang: “Ad marginem arvi, coord. geogr.: 41°37′45″N, 81°25′19″E” [Baicheng Xian 拜城县], May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml L11*, cultivated as JŠ 7369 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae agamospermae, foliis laete griseo-viridibus, late oblanceolatis usque oblanceolatis, pinnatisectis vel runcinato-pinnatisectis, lobis lateralibus (3 vel)4 vel 5 utrinque, petiolis late usque anguste alatis, phyllariis involucralibus exterioribus 14 ad 17, obscure olivaceo-viridibus nigricantibus, imbricatis, late lanceolatis vel ovato-lanceolatis, laxe adpressis, stigmatibus laete luteo-viridibus, antheris polliniferis, acheniis vulgo 4.3–4.5 mm longis, superne dense squamuloso-spinulosis, in pyramidem conicam 0.9–1.1 mm longam abrupte abeuntibus.

Herbs 15–20 cm tall. Petiole light purplish green, broadly winged in outer leaves but narrowly winged in middle ones; leaf blade light grayish green with a faintly brownish purple midvein, broadly oblanceolate to oblanceolate, 9–12 × 2–3 cm, sparsely arachnoid, pinnatisect to runcinate-pinnatisect; lateral lobes (3 or)4 or 5 pairs, ± triangular to ± deltoid-triangular, subrecurved, proximal margin straight to slightly concave and entire, distal margin convex and entire or with a few acute teeth, apex acute to sometimes ± obtuse; interlobes usually spotted purplish brown, short, margin often raised and entire; terminal lobe usually helmet-shaped, 2.5–4 × 2.5–3 cm, margin ± entire and often with 1 or 2 incisions, apex subacute. Scapes green but pinkish at base, ± overtopping leaves, usually sparsely arachnoid to glabrescent. Capitulum 3–3.5 cm wide. Involucre ca. 1 cm wide, base ± truncate. Outer phyllaries 14–17, abaxially dark (blackish) olivaceous green and wholly suffused brownish purple, ± imbricate, broadly lanceolate to ovate-lanceolate, outermost 8–9 × 3.5–4.5 mm and ca. 2/3 as long as inner ones, loosely appressed, paler border ± not developed or with membranous ca. 0.1 mm border, margin subglabrous or sparsely ciliate, apex ± flat; inner phyllaries ca. 1.3 cm, apex flat. Ligules deep yellow; outer ligules ± flat, outside striped purplish gray; inner ligules with purplish teeth at apex; ligule tube pubescent. Stigmas light greenish yellow, outside dark pubescent. Anthers polliniferous; pollen grains irregular in size. Achene light grayish olivaceous brown, 4.3–4.5 × ca. 1 mm; body ± densely spinulose-squamulose above, ± abruptly narrowing into a ± thin conic (0.9–)1–1.1 mm cone; beak 9.5–10.5 mm. Pappus white, 6–7 mm. Fl. late spring. Agamosperm.

● Field margins, roadsides; 1800–2000 m. W Xinjiang.

75. Taraxacum florum Kirschner & Štěpánek, **sp. nov.**

金发蒲公英 jin fa pu gong ying

Type: China. Xinjiang: "Ad ripam fluminis Ili He [伊犁河], haud procul ab oppido Yining [伊宁]," 600 m, 30 Sep 2004, *P. Sekerka, P. Hanzelka & I. Bulánková 04/32*, cultivated as JŠ 7961 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Xinjiang: "Tian Shan [天山], shore of Tian Chi lake [天池湖]," 1914 m, 1 Oct 2003, *P. Sekerka 03/1*, cultivated as JK 4946 (PRA).

Plantae agamospermae mediocres, foliis saturate viridibus, indistincte brunneo-purpurascentibus, oblanceolatis, pinnatisectis, lobis lateralibus 3 ad 5 utrinque, petiolis exalatis vel anguste alatis, phyllariis involucralibus exterioribus 15 ad 18, obscure griseo-viridibus nigricantibus, subpruinosis, late ovatis usque ovato-lanceolatis, 5–7 mm longis, 3–4.5 mm latis, subimbricatis, laxe adpressis, stigmatibus luteis, antheris polline carentibus, acheniis 3.6–4.1 mm longis, superne dense spinulosis, in pyramidem subcylindricam 0.5–0.8 mm longam sensim abeuntibus.

Herbs 12–20 cm tall. Petiole deep brownish purplish green, narrowly winged or unwinged; leaf blade deep green slightly suffused brownish purple, ± oblanceolate, 10–20 × 1.5–3.5 cm, sparsely arachnoid on purplish brown midvein, pinnatisect; lateral lobes 3–5 pairs, ± narrowly triangular, 6–17 × 5–10 mm, ± patent to subrecurved, proximal margin straight and entire, distal margin ± straight to ± sigmoid and entire or with a few acute teeth, apex acute; interlobes with margin ± entire; terminal lobe broadly triangular, margin entire, apex subacute to mucronate. Scapes purplish brown, subequaling leaves, sparsely arachnoid to glabrescent. Capitulum ca. 3 cm wide. Involucre ca. 8 mm wide, base ± rounded. Outer phyllaries 15–18, abaxially dark (blackish) grayish green, slightly pruinose, and suffused brownish purple in upper ca. 1/3, subimbricate, broadly ovate to ovate-lanceolate, outermost ones (5–)6–7 × (3–)3.5–4.5 mm and ca. 1/2 as long as inner ones, loosely appressed, border whitish and 0.1–0.2 mm wide, margin subglabrous or sparsely ciliate, apex flat; inner phyllaries 1–1.1 cm, apex flat. Ligules deep yellow; outer ligules ± flat, outside striped deep gray; inner ligules with long yellow teeth at apex; ligule tube pubescent. Stigmas pure yellow, abaxially pale yellow pubescent. Anthers without pollen. Achene light grayish olivaceous brown, 3.6–4.1 × 0.8–0.9 mm; body ± densely spinulose above, erect-patent, ± gradually narrowing into a subcylindric 0.5–0.8 mm cone, spinules thin; beak (7–)8–11 mm. Pappus white, ca. 6 mm. Fl. late spring. Agamosperm.

● Gravelly and sandy alluvial sites, pastures, shrubby and ruderal sites; 600–2000 m. Xinjiang.

76. Taraxacum abbreviatulum Kirschner & Štěpánek, **sp. nov.**

短茎蒲公英 duan jing pu gong ying

Type: China. Hubei: "Distr. Shennongjia [神农架林区]," 1800–2800 m, 23–30 Jun 1995, *R. Businský s.n.*, cultivated as JŠ 6344 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Hubei: *ibidem, R. Businský s.n.*, cultivated as JŠ 6345, JŠ 6348 (PRA).

Plantae agamospermae submediocres, foliis saturate viridibus, anguste oblanceolatis usque oblanceolatis, pinnatifidis vel pinnatisectis, lobis lateralibus 3 vel 4 utrinque, petiolis foliorum exteriorum late alatis, violaceis, phyllariis involucralibus exterioribus 17 ad 19, atro-viridibus usque obscure olivaceo-viridibus, imbricatis, ovatis vel ovato-lanceolatis, laxe adpressis, stigmatibus luteo-viridibus, antheris polliniferis, acheniis vulgo 3.4–3.5 mm longis, superne dense squamuloso-spinulosis, in pyramidem subconicam 0.4–0.5 mm longam subsensim abeuntibus.

Herbs 12–15 cm tall. Petiole purple, broadly winged in outer leaves but ± unwinged in middle ones; leaf blade deep green with a purplish midvein, narrowly oblanceolate to oblanceolate, 7–9 × 2–3 cm, sparsely arachnoid, pinnatifid to pinnatisect; lateral lobes 3 or 4 pairs, ± triangular, ± recurved to hamate-recurved, proximal margin entire, distal margin convex and entire, apex acute; interlobes short and broad, margin often raised but entire; terminal lobe broadly triangular, margin entire, apex subobtuse. Scapes pale brownish green, overtopping leaves, arachnoid. Capitulum to 4.5 cm wide. Involucre 1–1.2 cm wide, base ± truncate. Outer phyllaries 17–19, abaxially dark olivaceous green to blackish green and suffused brownish purple in upper ca. 1/3, ± imbricate, ± ovate to ovate-lanceolate, outermost ones 8–9 × (3.5–)4.5–5 mm and 1/2–3/5 as long as inner ones, loosely appressed, venation slightly prominent, with whitish membranous border ca. 0.1(–0.2) mm wide, margin sparsely ciliate, apex flat; inner phyllaries 1.4–1.5 cm, apex flat. Ligules deep yellow; outer ligules ± flat, outside striped greenish pinkish gray; inner ligules with grayish purple teeth at apex; ligule tube pubescent. Stigmas greenish yellow, abaxially dark pubescent. Anthers polliniferous; pollen grains irregular in size. Achene light grayish olivaceous brown, 3.4–3.5 × ca. 0.9 mm; body ± densely spinulose-squamulose above, subgradually narrowing into a subconic 0.4–0.5 mm cone; beak ca. 9.5 mm. Pappus ± white, ca. 6 mm. Fl. late spring. Agamosperm.

● Montane meadows and pastures; 1800–2800 m. W Hubei.

77. Taraxacum icterinum Kirschner & Štěpánek, **sp. nov.**

黄疸蒲公英 huang dan pu gong ying

Type: China. Sichuan: "Sichuan occid., urbs Kangding [康定]: in urbis vicinitate boreo-orientali," ca. 2650 m, 30 May 1992, *L. Businská & R. Businský 1*, cultivated as JŠ 5106 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Sichuan: *ibidem, L. Businská & R. Businský 1*, cultivated as JŠ 5105, JŠ 5107, JŠ 5108, JŠ 5109, JŠ 6232, JŠ 6364, JŠ 6716, JŠ 7092 (PRA); "W Sichuan, Garze [甘孜区], ad ripam dextram flum. Yalong [雅砻江]," ca. 3450 m, 17 Jun 1992, *L. Businská & R. Businský 5*, cultivated as JŠ 5080, JŠ 6217 (PRA).

Plantae agamospermae mediocres, foliis saturate viridibus, saepe badio-purpurascentibus, pinnatilobis vel pinnatisectis, lobis lateralibus 4 vel 5 utrinque, petiolis late alatis, phyllariis involucralibus exterioribus 13 ad 15, atro-viridibus, laxe adpressis, ovato-lanceolatis, stigmatibus luteo-viridibus, antheris polliniferis, acheniis plerumque 3.7–3.8 mm longis, superne dense squamuloso-spinulosis, in pyramidem subconicam ca. 0.4 mm longam ± abrupte abeuntibus.

Herbs 15–20 cm tall. Petiole purple, broadly winged; leaf blade deep green, sometimes suffused brownish purple, and with a purplish midvein, narrowly oblanceolate to narrowly oblong, 7–15 × 1.5–3 cm, sparsely arachnoid, shallowly pinnatilobed to pinnatisect, margin sometimes undivided and entire in distal ca. 1/3; lateral lobes 4 or 5 pairs, ± broadly triangular, recurved, proximal margin entire, distal margin shallowly sigmoid and entire but dentate in lower lobes, apex acute; interlobes short and broad, margin ± entire; terminal lobe narrowly triangular to helmet-shaped, margin entire, apex acute to mucronate. Scapes brownish green, overtopping leaves, sparsely arachnoid. Capitulum ca. 4 cm wide. Involucre 1–1.2 cm wide, base rounded. Outer phyllaries 13–15, abaxially blackish green, suffused brownish purple in upper part, and slightly pruinose, ± not imbricate, ± ovate-lanceolate, outermost ones 11–13 × 3–6 mm and almost as long as inner ones, loosely appressed, with a whitish 0.1–0.2 mm wide border, margin sparsely ciliate, apex flat; inner phyllaries 1.5–1.6 cm, apex flat. Ligules deep yellow; outer ligules ± flat, outside striped purplish brownish gray; inner ligules with ± yellow teeth at apex; ligule tube pubescent. Stigmas light greenish yellow, abaxially grayish pubescent. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 3.7–3.8 × 0.9–1.1 mm; body ± densely spinulose-squamulose above, ± abruptly narrowing into a subconic ca. 0.4 mm cone; beak ca. 1 cm. Pappus ± white, ca. 7 mm. Fl. late spring. Agamosperm.

● Montane meadows and pastures; 2600–3500 m. W Sichuan.

78. Taraxacum cyathiforme Kirschner & Štěpánek, **sp. nov.**

杯形蒲公英 bei xing pu gong ying

Type: China. Xinjiang: “Montes Tian Shan [天山], vallis Houxia [后峡]: in valle laterali cum arboribus solitaribus (*Picea schrenkiana*) et fruticibus (*Caragana jubata*),” 2561 m, 2 Oct 2004, *P. Sekerka, P. Hanzelka & I. Bulánková 04/42*, cultivated as JŠ 7960 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae agamospermae submediocres, foliis pallide viridibus, anguste ellipticis, pinnatisectis, lobis lateralibus 3 vel 4 utrinque, lineari-triangularibus, elongatis, apice lingulatis, petiolis latissime alatis, involucro basi subturbinato, phyllariis involucralibus exterioribus 12 ad 17, obscure griseo-viridibus, subpruinosis, lanceolatis vel lineari-lanceolatis, laxe adpressis vel erectis, stigmatibus obscure viridibus, antheris polliniferis, acheniis 3.5–3.9 mm longis, superne dense squamuloso-spinulosis, in pyramidem subconicam ca. 0.4 mm longam abrupte abeuntibus.

Herbs 8–12 cm tall. Petiole pale green or purplish, broadly winged; leaf blade light vivid green, narrowly elliptic, 6–12 × 2–3.5 cm, sparsely arachnoid, pinnatisect; midvein brownish pink; lateral lobes 3 or 4 pairs, ± linear-triangular, patent to subrecurved, distal part often lingulate-elongated, proximal margin entire, distal margin shallowly sigmoid, with deep incisions or denticulate, and sometimes entire, apex subacute; interlobes distinct, long, to 15 × 3–4 mm, ± entire or irregularly dentate; terminal lobe narrowly triangular to 3-partite, 2–3 × 1.3–2 cm, terminal segment elongated, usually entire. Scapes brownish green but purplish at base, equaling leaves, sparsely arachnoid. Capitulum 3.5–4 cm wide. Involucre 9–10 mm wide, base obconic. Outer phyllaries 12–17, abaxially grayish green and slightly pruinose, ± not imbricate, linear-lanceolate to lanceolate, outermost ones 7–9 × 2–3.3 mm and ca. 2/3 as long as inner ones, loosely appressed to erect, with a whitish 0.1–0.2 mm wide border, margin subglabrous, apex purplish and initially flat but in later capitula horned; inner phyllaries ca. 1.2 cm, apex ± flat. Ligules deep yellow; outer ligules ± flat, outside striped purplish brown; inner ligules with reddish teeth at apex; ligule tube sparsely pubescent to glabrous. Stigmas grayish green, abaxially blackish pubescent. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 3.5–3.9 × ca. 1.1 mm; body densely spinulose-squamulose above, ± abruptly narrowing into a subconic ca. 0.4 mm cone; beak ca. 5.5 mm. Pappus ± white, ca. 6 mm. Fl. late spring. Agamosperm.

● Montane shrubby slopes; 2500–2600 m. Xinjiang (Tian Shan).

79. Taraxacum tonsum Kirschner & Štěpánek, **sp. nov.**

短毛蒲公英 duan mao pu gong ying

Type: China. Xinjiang: “Urbs Kashi [喀什市]: in locis caespitosis ad Kashgar Hotel,” May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7379 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae agamospermae mediocres, foliis glaucescenti-viridibus, oblanceolatis, fere glabris, pinnatisectis, lobis lateralibus 3 vel 4(vel 5) utrinque, petiolis alatis, phyllariis involucralibus exterioribus 17 ad 20, pallide olivaceo-viridibus, conspicue albomarginatis, marginibus 0.2–0.4 mm latis, saepissime late ovatis vel ovatis, laxe adpressis, apice planis vel subcorniculatis, stigmatibus saturate luteis, antheris polliniferis, acheniis plerumque 4–4.2 mm longis, superne subdense spinulosis, in pyramidem subcylindricam 0.5–0.6 mm longam subabrupte abeuntibus.

Herbs 15–20 cm tall. Petiole pinkish purple, narrowly to broadly winged; leaf blade grayish green with a faintly pinkish midvein, oblanceolate, 9–19 × 1.7–2.8 cm, ± glabrous, regularly shallowly to deeply pinnatisect; lateral lobes 3 or 4(or 5) pairs, triangular to broadly so, 5–10 × ca. 10 mm, ± patent to subrecurved, distal margin straight to subconcave and sparsely minutely dentate or ± entire, apex acute; interlobes unspotted, 5–8 × ca. 5 mm, margin sparsely dentate or entire; terminal lobe triangular to narrowly triangular, 1–4 × 0.8–2.3 cm, rarely 3-partite, margin entire or sparsely dentate, apex subacute. Scapes light green but purplish at base, subequaling leaves, usually sparsely arachnoid. Capitulum 2–2.5 cm wide. Involucre 8–10 mm wide, base flat, rounded. Outer phyllaries 17–20, light olivaceous green but suffused purplish apically, imbricate, usually ovate to broadly ovate but some ovate-lanceolate, outermost ones (5.5–)7–8 × (3–)3.5–5 mm and 1/2–3/5 as long as inner ones, loosely appressed to erect-patent, with a distinct whitish 0.2–0.4 mm wide border, margin very sparsely ciliate, apex ± flat but subcorniculate in later capitula; inner phyllaries 1.4–1.5 cm. Ligules yellow; outer ligules ± flat, outside striped purplish black; inner ligules with yellow or faintly pink teeth at apex; ligule tube pubescent. Stigmas pure deep yellow. Anthers polliniferous; pollen grains irregular in size. Achene grayish light brown, 4–4.2 × 0.9–1.1 mm; body with prominent lateral

ridges, subdensely spinulose, subabruptly narrowing into a subcylindric 0.5–0.6 mm cone; beak 8–8.5 mm. Pappus dirty white, ca. 6 mm. Fl. late spring. Agamosperm.

● Grasslands, ruderal lawns, pastures; 1200–1400 m. SW Xinjiang (Kashi).

80. Taraxacum damnabile Kirschner & Štěpánek, **sp. nov.**

丑蒲公英 chou pu gong ying

Type: China. Shaanxi/Henan: “Prope limitem provinciarum Shaanxi et Henan, situ boreo-orientali ab oppido Danfeng [丹凤],” 1000–1500 m, 29–31 May 1995, *R. Businský s.n.*, cultivated as JŠ 5853 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Shaanxi/Henan: *ibidem, R. Businský s.n.*, cultivated as JŠ 5854, JŠ 5855, JŠ 5856, JŠ 5857, JŠ 5858, JŠ 5859, JŠ 5860, JŠ 5861, JŠ 5862 (PRA). Hubei: “Distr. Shennongjia [神农架林区],” 1800–2800 m, 23–30 Jun 1995, *R. Businský s.n.*, cultivated as JŠ 5864, JŠ 5870, JŠ 5871, JŠ 5872 (PRA).

Plantae agamospermae mediocres, foliis obscure viridibus, pinnatisectis, lobis lateralibus numerosis, (4 vel)5 vel 6(vel 7) utrinque, triangularibus, subrecurvis, plerumque lingulato-elongatis, interlobiis badio-purpureis, petiolis alatis, phyllariis involucralibus exterioribus 16 ad 22, irregulariter patentibus usque arcuato-recurvis, ovato-lanceolatis vel lanceolatis, glaberrimis, stigmatibus subgriseo-luteis, antheris polliniferis, acheniis 3.7–3.9 mm longis, superne dense squamuloso-spinulosis, in pyramidem conicam 0.5–0.7 mm longam subsensim abeuntibus.

Herbs 14–17 cm tall. Petiole green or purplish, very broadly winged in outer leaves but narrowly so in inner ones; leaf blade dark green, usually suffused bronze, and with a brownish pink midvein, broadly linear-oblanceolate to narrowly oblong, 10–17 × 2–3.5 cm, arachnoid, pinnatisect; lateral lobes (4 or)5 or 6(or 7) pairs, ± triangular, subrecurved, distal part sometimes lingulate-elongated, proximal margin straight and entire, distal margin shallowly sigmoid to ± straight and usually sparsely denticulate or sometimes entire, apex acute; interlobes with deep purple brown spots, short, 4–7 mm wide, margin irregularly dentate; terminal lobe broadly triangular to helmet-shaped, 1–3 × 1.5–2.5 cm, terminal segment elongated, margin usually entire or with irregular teeth or incisions. Scapes purplish green, subequaling leaves, ± densely arachnoid. Capitulum 3.5–4.5 cm wide. Involucre ca. 1 cm wide, base ± rounded. Outer phyllaries 16–22, abaxially deep olivaceous green and apically brownish pink, ± not imbricate, ovate-lanceolate to lanceolate, outermost ones 9–11 × 3–5 mm and ca. 2/3 as long as inner ones, conspicuously irregularly patent to arcuate-recurved, border light grayish green but later abaxially also suffused brownish purple, membranous, and 0.1–0.2 mm wide, margin glabrous, apex ± callose; inner phyllaries 1.1–1.2 cm. Ligules deep yellow; outer ligules ± flat, outside striped greenish gray; inner ligules with dirty yellow or yellow teeth at apex. Stigmas grayish yellow, abaxially partly blackish pubescent. Anthers polliniferous; pollen grains irregular in size. Achene grayish light brown, 3.7–3.9 × 0.9–1 mm; body with prominent lateral ridges, densely spinulose-squamulose above, ± subgradually narrowing into a ± conic 0.5–0.7 mm cone; beak 1–1.1 cm. Pappus ± white, ca. 6 mm. Fl. late spring. Agamosperm.

● Pastures, shrubby slopes; 1000–2800 m. E Henan, W Hubei, SW Shaanxi.

81. Taraxacum adglabrum Kirschner & Štěpánek, **sp. nov.**

无毛蒲公英 wu mao pu gong ying

Type: China. Xinjiang: “In agro plantarum gossypini,” 500 m, May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml L28*, cultivated as JŠ 7395 (holotype, PRA; isotypes, MO, PE, PRA).

Paratype: China. Xinjiang: “In pago Fukang Desert Exp. Station, 44°17′25″N, 87°56′22″E” [Fukang Xian 阜康县], May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml L27*, cultivated as JŠ 7391 (PRA).

Plantae agamospermae submediocres, foliis glaucescenti-viridibus, lineari-oblanceolatis, subglabris, pinnatilobis usque pinnatisectis, lobis lateralibus 4 ad 6 utrinque, late triangularibus, recurvis, petiolis alatis purpurascentibus, phyllariis involucralibus exterioribus 11 ad 13, ovato-lanceolatis usque ovatis, obscure viridibus, late pallide marginatis, laxe adpressis, stigmatibus saturate luteis, antheris polliniferis, acheniis plerumque 4.3–4.5 mm longis, superne subsparse spinulosis, persensim in pyramidem subcylindricam 0.8–1 mm longam abeuntibus.

Herbs to 15 cm tall. Petiole grayish purple to bright purple, winged; leaf blade grayish green, often slightly suffused brownish purple, and with a light purplish midvein, linear-oblanceolate to narrowly oblong, 9–13 × 1.7–2.5 cm, very sparsely arachnoid, pinnatilobed to shallowly pinnatisect but sometimes undivided and coarsely dentate; lateral lobes 4–6 pairs, broadly triangular, to 8 × 10 mm, recurved, proximal margin ± straight and usually entire, distal margin straight or shallowly sigmoid and entire or sparsely denticulate, apex acute; interlobes not conspicuous, short and broad, margin ± entire or with a few small teeth; terminal lobe ± narrowly triangular to almost helmet-shaped, 1.5–3 × 1.5–2 cm, terminal segment subacute to acute, distal margin ± convex and entire or irregularly shallowly lobulate-dentate. Scapes pinkish green at base, purple above after anthesis, ± equaling leaves, arachnoid but later glabrescent. Capitulum ca. 1.5 cm wide, remaining partly closed. Involucre 8–9 mm wide, base flat to subtruncate. Outer phyllaries 11–13, dark green middle part with a gradual transition into light green to whitish green border, ± not imbricate, ovate-lanceolate to ovate, outermost ones 4–6 × 2.5–3.8 mm and 1/3–1/2 as long as inner ones, loosely appressed, border to 1.5 mm wide, margin 0.1–0.2 mm, membranous, subglabrous, and purplish on distal ca. 1/3, apex flat or dark callose; inner phyllaries ca. 1 cm. Ligules dirty yellow; outer ligules canaliculate, outside striped grayish purple; inner ligules with yellow or purplish teeth at apex; ligule tube pubescent. Stigmas deep yellow. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, (3.5–)4.3–4.5 × 0.7–0.8 mm; body with ± prominent lateral ridges, ± sparsely spinulose above, very gradually narrowing into a subcylindric 0.8–1 mm cone; beak ca. 7 mm. Pappus ± white, 6–7 mm. Fl. late spring. Agamosperm.

● Pastures, ruderal sites; 500–1500 m. Xinjiang.

82. Taraxacum subcontristans Kirschner & Štěpánek, **sp. nov.**

圆叶蒲公英 yuan ye pu gong ying

Type: China. Xinjiang: “In pascuo, coord. geogr.: 41°49′56″N, 82°24′05″E” [Baicheng Xian 拜城县], 1127 m, May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7374 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Xinjiang: *ibidem, P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7376 (PRA); “in populeto culto secundum rivum aquarum, coord. geogr.: 42°04′45″N, 86°34′59″E [corresponding to Yanqi Xian 焉耆县],” 930 m, May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml L23*, cultivated as JŠ 7382 (PRA). Xizang: “The city of Lhasa [拉萨市], in the park Lukang [禄康公元] in the center of Lhasa,” ca. 3500 m, 23 Jun 2002, *M. Štefánek 60*, cultivated as JŠ 7848 (PRA).

Plantae agamospermae subrobustae, foliis glaucescenti-viridibus, anguste lanceolatis vel anguste ellipticis, subglabris, irregulariter pinnatisectis, lobis lateralibus 5 vel 6 utrinque, lineari-triangularibus vel anguste triangularibus, patentibus vel recurvis vel sursum curvatis, marginibus distalibus dentatis et lobulatis, interlobiis grosse dentatis vel lobulatis, petiolis alatis, griseo-purpurascentibus, phyllariis involucralibus exterioribus 13 ad 17, olivaceo-viridibus, imbricatis, ovatis usque subrotundatis, laxe adpressis usque erectis, marginibus pallide membranaceo-viridibus 0.2–0.6 mm latis, stigmatibus luteo-viridibus, antheris polliniferis, acheniis 4.5–4.7 mm longis, superne dense spinulosis, in pyramidem subcylindricam 0.9–1 mm longam subabrupte abeuntibus.

Herbs 20–25 cm tall. Petiole grayish purple, winged; leaf blade grayish green, narrowly oblanceolate to narrowly elliptic, 16–20 × 4–5 cm, very sparsely arachnoid, pinnatisect with a complicated irregular pattern, midvein light purplish at base but otherwise light green; lateral lobes 5 or 6 pairs, linear-triangular to narrowly triangular, patent, variously recurved, or curved upward, proximal margin entire, distal margin irregularly dentate and/or lobulate, apex acute; interlobes brownish purple spotted along midvein, to 1.5 cm, margin sparsely coarsely dentate or lobulate; terminal lobe narrowly to broadly triangular, 1.5–3.5 × 3–4 cm, terminal segment narrowly helmet-shaped to lingulate, distal margin concave and with teeth or incisions. Scapes pinkish green at base but otherwise light green, ± overtopping leaves, arachnoid. Capitulum 3–3.5 cm wide. Involucre ca. 1.2 cm wide, base flat to subtruncate. Outer phyllaries 13–17, light brownish olivaceous green suffused brown purplish distally, imbricate, ovate to orbicular-ovate, outermost ones 9–11 × 6–8 mm and 1/2–3/5 as long as inner ones, loosely appressed to erect, border pale green, (0.2–)0.3–0.6 mm wide, and membranous, margin subglabrous, apex flat or corniculate; inner phyllaries 1.3–1.4 cm. Ligules deep yellow; outer ligules flat, outside striped purplish gray; inner ligules with purplish teeth at apex; ligule tube pubescent. Stigmas yellowish green, abaxially blackish pubescent. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 4.5–4.7 × 1.1–1.2 mm; body ± winged with prominent lateral ridges, densely spinulose above, subabruptly narrowing into a subcylindric 0.9–1 mm cone; beak 1.1–1.2 cm. Pappus dirty white, ca. 8 mm. Fl. late spring. Agamosperm.

● Montane pastures and shrubby slopes; 900–3500 m. W Xinjiang, S Xizang.

83. Taraxacum aeneum Kirschner & Štěpánek, **sp. nov.**

谦虚蒲公英 qian xu pu gong ying

Type: China. Xinjiang: “Urbs Kashi [喀什]: in locis caespitosis ad Kashgar Hotel,” May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7388 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Xinjiang: *ibidem*, *P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7389 (PRA); “In pascuo, coord. geogr.: 41°49′56″N, 82°24′05″E” [Baicheng Xian 拜城县], 1127 m, May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7372 (PRA).

Plantae agamospermae mediocres, foliis subglaucescenti-viridibus, anguste oblanceolatis, subglabris, pinnatisectis, lobis lateralibus 3 vel 4(vel 5) utrinque, interlobiis integerrimis badio-purpurascentibus, phyllariis involucralibus exterioribus 14 ad 17, pallide viridibus, venosis, late ovatis usque ovato-lanceolatis, subimbricatis, laxe adpressis vel irregulariter erecto-patentibus, stigmatibus luteo-viridibus, antheris polline carentibus vel raro sparsissime polliniferis, acheniis plerumque 4.4–4.5 mm longis, superne dense spinulosis, in pyramidem subcylindricam 0.9–1.1 mm longam subsensim abeuntibus.

Herbs 16–20 cm tall. Petiole grayish purple, unwinged; leaf blade slightly grayish green, often suffused brownish, and with a purplish brown midvein, ± narrowly oblanceolate, 12–18 × 2–3.5 cm, subglabrous, pinnatisect; lateral lobes 3 or 4(or 5) pairs, narrowly deltoid to hamate, patent with recurved distal part 0.8–1.5 cm, proximal margin entire, distal margin convex to sigmoid and with 1–3 distinct teeth, apex acute; interlobes brownish purple spotted, to 10 × 4 mm, margin usually entire; terminal lobe helmet-shaped to lingulate, 2–3.5 × 1.5–2.5 cm, distal margin concave and subentire or with asymmetric incisions. Scapes purplish at base, brown-purple below capitulum, and otherwise light green, ± equaling leaves, sparsely arachnoid. Capitulum ca. 2.5 cm wide. Involucre 8–10 mm wide, base rounded. Outer phyllaries 14–17, light green suffused purplish at apex, subimbricate, broadly ovate to ovate-lanceolate, outermost ones 7–8.5 × 3–5.5 mm and ca. 2/3 as long as inner ones, loosely appressed to irregularly erect-patent, venation visible, border 0.2–0.4 mm wide and membranous, margin sparsely ciliate, apex flat or callose; inner phyllaries 1.1–1.2 cm. Ligules yellow; outer ligules ± flat, outside striped purplish grayish brown; inner ligules with purplish teeth at apex; ligule tube pubescent. Stigmas yellowish green, abaxially blackish pubescent. Anthers without pollen or pollen sparsely developed; pollen grains irregular in size. Achene light grayish olivaceous brown, 4.4–4.5 × 0.9–1.1 mm; body ± winged with prominent lateral ridges, densely spinulose above and conspicuously so on ridges, subgradually narrowing into a subcylindric 0.9–1.1 mm cone; beak 8–9 mm. Pappus white, ca. 7 mm. Fl. late spring. Agamosperm.

● Pastures, grasslands, ruderal lawns; 1000–1400 m. W Xinjiang.

84. Taraxacum simulans Kirschner & Štěpánek, **sp. nov.**

拟蒲公英 ni pu gong ying

Type: China. Sichuan: "Dêgê [德格], in southern vicinity of the town," 4 Jun 1992, *L. Businská & R. Businský 3*, cultivated as JŠ 5113 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae agamospermae subparvae, foliis saturate viridibus, saepissime anguste oblanceolatis, araneosis, pinnatisectis, lobis lateralibus 4 ad 6 utrinque, vulgo anguste triangularibus, patentibus, interlobiis dentatis, petiolis dense araneosis, purpurascentibus, in foliis exterioribus perlate alatis, phyllariis involucralibus exterioribus 13 ad 17, obscure olivaceo-viridibus, lanceolatis usque ovatis, laxe adpressis, stigmatibus sordide luteis, antheris polliniferis, acheniis plerumque 4.3–4.5 mm longis, superne subsparse distincte spinulosis, in pyramidem subconicam vel subcylindricam 1–1.1 mm longam persensim abeuntibus.

Herbs 9–13 cm tall. Petiole purple, densely arachnoid, broadly winged in outer leaves but ± narrow in inner ones; leaf blade deep green, narrowly oblanceolate to narrowly elliptic, 6–10 × 1.5–3 cm, arachnoid, pinnatisect, midvein light green but light purplish at base; lateral lobes 4–6 pairs, linear-triangular to narrowly triangular, to 1 cm, patent but some subrecurved or pointing upward, proximal margin entire, distal margin ± straight to subconcave and irregularly dentate, apex acute; interlobes not spotted, 3–9 mm wide, margin irregularly dentate; terminal lobe narrowly to broadly triangular, 1.5–3.5 × 3–4 cm, terminal segment narrowly triangular to flat-deltoid, to 1 × 1.5 cm, margin entire, apex acute. Scapes pinkish green at base but otherwise light green, ± equaling leaves, arachnoid. Capitulum 4–4.5 cm wide. Involucre 9–10 mm wide, base flat. Outer phyllaries 13–17, dark olivaceous green suffused purplish distally, not imbricate, lanceolate to ovate, largest ones 8–9 × (3–)3.5–4 mm and ca. 3/5 as long as inner ones, loosely appressed, border whitish membranous and 0.1–0.3 mm wide, margin sparsely ciliate, apex ± flat or corniculate; inner phyllaries 1.2–1.3 cm. Ligules deep yellow; outer ligules flat, outside striped greenish gray; inner ligules with yellow teeth at apex; ligule tube pubescent. Stigmas dirty yellow. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 4.3–4.5 × 0.7–1 mm; body subsparsely but distinctly spinulose above, very gradually narrowing into a subconic to subcylindric 1–1.1 mm cone; beak 1–1.1 cm. Pappus dirty white, 5–6 mm. Fl. late spring. Agamosperm.

● Montane grasslands; 3200–3300 m. W Sichuan (Dêgê).

85. Taraxacum subcalanthodium Kirschner & Štěpánek, **sp. nov.**

亚大斗蒲公英 ya da dou pu gong ying

Type: China. Xinjiang: "Tian Shan [天山]: ad locum Glacial Station in praerupto alveo fluminis (convexo angustissimo) Houxia [后峡] dicto," 2135 m, May 1999, *P. Sekerka, Zhang Dao Yuan & V. Huml s.n.*, cultivated as JŠ 7396 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae agamospermae submediocres, foliis glaucescenti-viridibus, saepissime brunnescentibus, oblanceolatis, pinnatisectis, lobis lateralibus 4 ad 6 utrinque, triangularibus vel anguste triangularibus, subrecurvis, integerrimis, phyllariis involucralibus exterioribus 17 ad 20, imbricatis, obscure olivaceo-viridibus vel atro-viridibus, lanceolatis usque ovatis, laxe adpressis, apice planis vel subcorniculatis, stigmatibus luteo-virescentibus, antheris polliniferis, acheniis 3.8–4 mm longis, superne dense spinulosis, in pyramidem saepissime subconicam 0.8–0.9 mm longam subabrupte abeuntibus.

Herbs 12–15 cm tall. Petiole grayish purple, winged; leaf blade grayish green, usually suffused bronze, and with a light purplish gray midvein, narrowly oblanceolate to oblanceolate, 6–12 × 1.7–3.7 cm, very sparsely arachnoid, regularly pinnatisect; lateral lobes 4–6 pairs, triangular or narrowly triangular, to 1.5 × 1.2 cm, subrecurved, distal margin ± straight and entire, proximal margin entire or with a single broadly triangular tooth at base, apex acute; interlobes not spotted or faintly spotted, ca. 6 × 4–8 mm, margin usually ± entire; terminal lobe triangular, broadly triangular, or sometimes ± helmet-shaped, terminal segment with an entire margin, apex acute. Scapes purple-green at base but otherwise light green, ± equaling leaves, arachnoid. Capitulum 2.5–3 cm wide. Involucre 8–9 mm wide, base flat. Outer phyllaries 17–20, dark olivaceous green to blackish green and suffused purplish distally, imbricate, lanceolate to ovate, outermost ones 7–8 × 3–4 mm and 1/2–3/5 as long as inner ones, loosely appressed, border whitish membranous and 0.1–0.2 mm wide, margin sparsely ciliate, apex flat or ± corniculate; inner phyllaries 1.2–1.3 cm. Ligules deep yellow; outer ligules flat, outside striped greenish gray; inner ligules with yellow teeth at apex; ligule tube pubescent. Stigmas dirty (greenish) yellow. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 3.8–4 × 0.9–1 mm; body ± densely spinulose above, subabruptly narrowing into a subconic to subcylindric 0.8–0.9 mm cone; beak 8–8.5 mm. Pappus ± white, ca. 5 mm. Fl. late spring. Agamosperm.

● Montane grasslands; 2000–2500 m. Xinjiang (Tian Shan).

86. Taraxacum xinyuanicum D. T. Zhai & C. H. An, Acta Phytotax. Sin. 34: 318. 1996.

新源蒲公英 xin yuan pu gong ying

Herbs 5–18 cm tall. Petiole ± purplish, narrow; leaf blade mid-green, ± broadly oblanceolate, 4–10 × 1.5–3.5 cm, sparsely arachnoid but later glabrescent, deeply pinnatisect; lateral lobes 3–5, ± triangular to triangular-deltoid, subpatent to ± recurved, distal margin convex and entire or with 1 or 2 teeth; interlobes broad, margin dentate and/or lobulate; terminal lobe triangular to helmet-shaped, margin ± entire. Scapes greenish, ± overtopping leaves, sparsely arachnoid but densely so below capitulum. Involucre 6–7 mm wide, base ± rounded. Outer phyllaries 12–15, pale green, not imbricate, ovate-lanceolate to lanceolate, outermost ones ca. 6 × 2–3 mm and 2/5–1/2 as long as inner ones, ± patent, margin glabrous to sparsely ciliate, flat below apex; inner phyllaries 0.9–1.2 cm, apically flat. Ligules yellow; outer ligules flat, outside faintly striped grayish; floret tube outside glabrous. Stigmas discolored. Anthers polliniferous; pollen grains regular in size. Achene grayish straw-colored brown, ca. 2.5 × 0.8–0.9 mm; body ± smooth below, apically spinulose, ± abruptly narrowing into a thick subconic 0.2–0.3

mm cone; beak ca. 5 mm. Pappus white, 5–6 mm. Fl. spring and summer. Sexual. 2*n* = 16*

● Gravelly slopes, roadsides; ca. 1500 m. Xinjiang.

Taraxacum xinyuanicum is the first sexual taxon recognized within *T.* sect. *Qaisera*.

87. Taraxacum potaninii Tzvelev, Novosti Sist. Vyssh. Rast. 24: 220. 1987.

新疆蒲公英 xin jiang pu gong ying

Herbs 15–35 cm tall. Petiole pinkish green, narrow; leaf blade pale green to mid-green, ± oblanceolate, 10–15 × 2.5–3.5 cm, sparsely arachnoid but later glabrescent, margin subentire to shallowly lobed; lateral lobes 2–5, ± flat triangular, ± recurved, distal margin straight and entire or dentate; interlobes indistinct; terminal lobe not clearly developed, broadly triangular, apex ± acute. Scapes brownish green, ± overtopping leaves, subglabrous. Involucre 9–10 mm wide, base rounded. Outer phyllaries 13–16, dark green with a broad paler border, subimbricate, ovate-lanceolate to lanceolate, outermost ones 7–9 × 3–4 mm and ca. 1/2 as long as inner ones, ± appressed, border 0.5–1 mm, margin sparsely ciliate, flat and not corniculate below apex; inner phyllaries 1.3–1.8 cm, apically flat. Ligules (?pale) yellow; outer ligules flat, outside striped dark; inner ligules with purplish long teeth. Stigmas dark to blackish green. Achene grayish straw-colored brown, 4.2–4.7 × 1–1.1 mm; body ± smooth below, apically subsparsely spinulose with thin acute spinules, ± subabruptly narrowing into a conic 0.7–0.9 mm cone; beak ca. 6 mm. Pappus yellowish white, ca. 5 mm. Fl. summer. Agamosperm.

● Mountain slopes; 2000–2400 m. W Xinjiang (Tian Shan).

Taraxacum potaninii is known from the type specimen only. The locality given on the type label differs from that in the protologue, but the description fully matches the material.

88. Taraxacum puberulum G. E. Haglund, Bot. Not. 1938: 313. 1938.

疏毛蒲公英 shu mao pu gong ying

Herbs to 15 cm tall. Petiole purplish, narrowly winged to narrow; leaf blade grayish pale green, narrowly oblanceolate, 10–13 × 1.5–2.5 cm, sparsely arachnoid but later glabrescent, pinnatisect; lateral lobes 4 or 5, ± narrowly triangular to triangular, subpatent to ± recurved, distal margin straight to ± concave and entire or minutely dentate; interlobes 5–10 mm, margin usually remotely dentate; terminal lobe triangular to triangular-sagittate, 1.2–2 × 1.2–1.5 cm, apex ± acute. Scapes brownish green, ± overtopping leaves, sparsely arachnoid at base but densely arachnoid below capitulum. Involucre 7–8 mm wide, base rounded to ± truncate. Outer phyllaries 13–16, pale green with a paler border, ± not imbricate, ovate-lanceolate, outermost ones 5–7 × 2–3 mm and 1/2–2/3 as long as inner ones, ± subappressed, border 0.2–0.5 mm, margin glabrous to sparsely ciliate, flat to corniculate below apex; inner phyllaries 1.1–1.3 cm, apically minutely corniculate. Ligules yellow; outer ligules flat, outside striped brownish purple; inner ligules with purple or dirty yellow teeth; floret tube outside pubescent. Stigmas dirty yellow to pale greenish. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 3.8–4 × 0.8–0.9 mm; body ± smooth below, apically spinulose with thin long acute spinules, ± gradually narrowing into a cylindric 0.8–1 mm cone; beak ca. 8 mm. Pappus pure white, 5–6 mm. Fl. spring. Agamosperm.

● Grasslands; ca. 1300 m. SW Xinjiang (Kashi).

Taraxacum puberulum is based on a single wild specimen and a few cultivated plants. The taxon has many features of *T.* sect. *Ceratoidea* (achene characters, outer phyllary color, shape, and posture), but in other attributes it approaches *T.* sect. *Qaisera*.

89. Taraxacum protractifolium G. E. Haglund, Bot. Not. 1938: 311. 1938.

长叶蒲公英 chang ye pu gong ying

Herbs to 25 cm tall, subrobust. Petiole purplish, winged; leaf blade grayish green with a pinkish midvein, oblanceolate to broadly linear, 10–18 × 2.5–5 cm, subglabrous, regularly deeply lobed; lateral lobes 3–6 pairs, triangular, ± patent, apical margin concave and entire or minutely dentate, apex acuminate; terminal lobe triangular, apex subobtuse. Scapes brownish green, ± equaling leaves, apically arachnoid when young. Capitulum ca. 4 cm wide. Involucre 1.1–1.5 cm wide, base broadly rounded. Outer phyllaries 15–19, ± imbricate, ovate to ovate-lanceolate, outermost ones 8–11 × 3–4.5 mm and ca. 1/2 as long as inner ones, loosely appressed to erect, usually not distinctly veined, middle part blackish green, border whitish pale green and to 1 mm wide, margin glabrous, not corniculate below apex; inner phyllaries 1.7–1.8 cm. Ligules deep yellow; outer ligules outside striped purplish; inner ligules with pinkish apical teeth; floret tube pubescent. Stigmas greenish. Anthers polliniferous; pollen grains irregular in size. Achene 4.2–4.5(–5) × 0.9–1 mm; body sparsely tuberculate to smooth at base, subdensely spinulose below cone, apically ± gradually narrowing into a 0.8–1 mm subcylindric cone, spinules distinct, thin, straight, and acute; beak ca. 9 mm. Pappus white. Fl. early summer. Agamosperm.

● Grasslands. SW Xinjiang.

90. Taraxacum brevicorniculatum Koroleva, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 8: 93. 1940.

短角蒲公英 duan jiao pu gong ying

Herbs 10–20(–25) cm tall. Petiole pale green or sometimes pinkish, ± winged; leaf blade bright light green with a greenish midvein, oblanceolate, (8–)10–14(–23) × 2–3 cm, sparsely arachnoid, sometimes undivided, usually pinnatilobed to pinnatisect, sometimes lyrate-runcinate (lobes in lower ca. 1/2); lateral lobes 4 or 5, triangular to deltoid, ± patent to subrecurved, distal margin usually convex to ± sigmoid and subentire, apex acute; interlobes ca. 10 × 5–8 mm, margin entire or sparsely denticulate; terminal lobe flat-triangular to flat-deltoid, margin entire, apex mucronate. Scapes pale green at base but brownish green above, usually overtopping leaves, floccose-arachnoid and densely so below capitulum. Capitulum 2.5–3.5 cm wide. Involucre 9–10 mm wide, base rounded to slightly obconic. Outer phyllaries (12 or)13–15(or 16), light green, ± not imbricate, ovate-lanceolate to lanceolate, outermost ones 5.5–8

× 2–3 mm and 2/5–2/3 as long as inner ones, loosely appressed, erect to rarely irregularly patent, border ± distinct, whitish membranous, and 0.3–0.5(–0.9) mm wide, margin ± glabrous, apex suffused red with a short obtuse horn to 1 mm; inner phyllaries 1.3–1.5 cm, callose to minutely (ca. 0.3 mm) corniculate near apex. Ligules yellow; outer ligules ± flat, outside broadly striped grayish pink; inner ligules with dirty yellow or pinkish apical teeth. Stigmas dirty yellow to slightly greenish yellow. Anthers polliniferous; pollen grains irregular in size. Achene grayish pale brown, (3.6–)4.2–4.5(–5) × (0.8–)0.9–1.2 mm; body densely spinulose in upper 1/3–1/5, subgradually to subabruptly narrowing into a thin ± cylindric (0.7–)1.1–1.6 mm cone, spinules distinct, ± long, acute; beak (6–)6.5–7.5(–8) mm. Pappus white, 5–6.5 mm. Fl. spring and early summer. Agamosperm. $2n = 24$.

Meadows and pastures, usually on subsaline soils; 1500–2000 m. W Xinjiang [Kazakhstan].

Taraxacum brevicorniculatum is often a weed in plantations of *T. koksaghyz* in Russia and other countries where *T. koksaghyz* is grown as a source of biosynthetic rubber. *Taraxacum brevicorniculatum* is often mistakenly equated or confused with the sexual diploid *T. koksaghyz* of *T.* sect. *Ceratoidea*, which can be distinguished by purely yellow stigmas, fleshy glaucous grayish green leaves, obtuse leaf lobes, outer phyllaries with thin mostly 2.5–4 mm horns, inner phyllaries with thin mostly 1.7–2 mm horns, regular pollen, and achenes 2.8–3.8 × 0.7–0.9 mm with a beak to 4.5 mm. *Taraxacum brevicorniculatum* also has a much lower root rubber content. Genetic analyses (P. van Dijk, unpubl.) show that the triploid *T. brevicorniculatum* is a hybridogenous species with *T. koksaghyz* as one of the parental taxa. *Taraxacum brevicorniculatum* is in many respects intermediate between *T.* sect. *Ceratoidea* and *T.* sect. *Qaisera*.

11. Taraxacum sect. **Ceratoidea** Kirschner & Štěpánek, Phyton (Horn) 48: 63. 2008.

角状蒲公英组 jiao zhuang pu gong ying zu

Leaves usually slightly fleshy, light green to pale glaucous-green, sometimes suffused bronze, not spotted, subglabrous. Outer phyllaries usually light to yellowish green with an indistinct paler or whitish border but often reddish near apex, usually appressed to loosely appressed or erect, ovate, lanceolate, or rarely linear-lanceolate, usually 4–6.5 × 1–3.5 mm, apex with horn or at least corniculate. Outer ligules usually pale yellow, outside striped faintly reddish. Stigmas pure yellow. Achene light grayish straw-colored brown, usually 3–5 mm, to 0.9 mm wide; body relatively densely spinulose above, gradually to subgradually narrowing into subconic to subcylindric (0.7–)0.8–1(–1.6) mm cone, spinules usually thin, straight, erect, and acute; beak (3.5–)5–7(–8.5) mm. Pappus white to snow white, usually 5–7 mm.

About six to eight species: centered in C Asia; two species in China.

Taraxacum glaucanthum (Ledebour) Candolle (Prodr. 7: 147. 1838, not Nakai & Koidzumi, 1936), another member of *T.* sect. *Ceratoidea*, was described from NE Kazakhstan in the vicinity of the Chinese border and might be detected in northwesternmost Xinjiang.

Taraxacum monochlamydeum Handel-Mazzetti (Monogr. Taraxacum, 43. 1907) was repeatedly reported to occur in Xinjiang (since G. E. Haglund in Persson, Bot. Not. 1938: 310. 1938). During that time, *T. bicorne* was believed to be a member of *T.* sect. *Ceratophora* (Handel-Mazzetti) A. P. Khokhrjakov (= *T.* sect. *Borealia* in the present treatment) and generally overlooked. Schischkin and Tzvelev (Fl. URSS 29: 483. 1964) recognized *T. bicorne* as a member of *T.* sect. *Macrocornuta* s.l. The Chinese material seen, partly also identified as *T. monochlamydeum* by G. E. Haglund, belongs to *T. bicorne*, and *T. monochlamydeum* probably is confined to more western parts of C Asia (being common in Turkmenistan and Uzbekistan). The occurrence of *T. monochlamydeum* in China remains to be confirmed, and further study is needed.

1a. Stigmas dirty yellow to light greenish yellow; pollen grains irregular in size; involucre 9–10 mm wide at base; paler outer phyllary border 0.3–0.9 mm wide .... 90. *T. brevicorniculatum* (see *T.* sect. *Qaisera*)
1b. Stigmas pure yellow; pollen grains regular in size; involucre to 8 mm wide at base; paler outer phyllary border 0.1–0.4 mm wide.
2a. Leaf lateral lobes with entire distal margin; inner phyllaries with a thin horn; achene beak 3–4.5 mm ..... 91. *T. koksaghyz*
2b. Leaf lateral lobes with denticulate distal margin; inner phyllaries with a thick short horn; achene beak 7–9 mm ..... 92. *T. bicorne*

91. Taraxacum koksaghyz Rodin, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 1: 187. 1933 [*"koksaghyz"*].

橡胶草 xiang jiao cao

Herbs 4–15 cm tall. Petiole pale green, winged; leaf blade light glaucous grayish green with a light green to rarely pinkish midvein, narrowly oblanceolate to broadly oblanceolate, 3–7(–10) × 1.2–3 cm, ± fleshy, very sparsely arachnoid to glabrous, undivided, margin remotely denticulate to regularly pinnatilobed to pinnatifid; lateral lobes 2 or 3(–5) pairs, broadly triangular, patent to subrecurved, proximal margin ± straight and entire, distal margin convex and entire, apex obtuse to subacute; interlobes not spotted, broad, margin entire; terminal lobe usually triangular, margin entire, apex subobtuse. Scapes light green or pinkish, ± overtopping leaves, arachnoid. Capitulum 2–3 cm wide. Involucre 5–8 mm wide, base obconic-rounded. Outer phyllaries 8–13, light green sometimes distally suffused purplish, not imbricate, linear-lanceolate to narrowly ovate, outermost ones 5.5–7 × (1–)1.2–2.2(–2.5) mm and 1/2–4/5 as long as inner ones but sometimes equaling them, loosely appressed to erect, border whitish light green or ± membranous and 0.1–0.3 mm wide, margin sparsely ciliate to glabrous, apex with a 2.5–4 mm horn of perpendicular to erect position; inner phyllaries 8–12 mm, apex with a thin 1–2 mm horn. Ligules light yellow; outer ligules flat, outside not striped or faintly striped purplish; inner ligules with yellow teeth at apex. Stigmas pure yellow. Anthers polliniferous; pollen grains regular in

size. Achene light grayish straw-colored brown, 2.8–3.8 × 0.7–0.9 mm; body ± densely spinulose above, subgradually narrowing into a subcylindric (0.5–)0.7–1 mm cone, spinules usually irregularly bent upward and not squamulose; beak 3–4.5 mm. Pappus ± white, 3.5–4.5 mm. Fl. late spring and early summer. Sexual. 2*n* = 16.

Medium-moist subsaline pastures with *Achnatherum splendens*, path margins, riverbanks; 1600–2000 m. W Xinjiang [Kazakhstan].

92. Taraxacum bicorne Dahlstedt, Ark. Bot. 5(9): 29. 1906.

双角蒲公英 shuang jiao pu gong ying

Herbs 4–17 cm tall. Petiole pale green, narrowly winged; leaf blade glaucous-green with a light green to pinkish midvein, narrowly oblanceolate to narrowly oblong, 3–12 × 1.1–2.5 cm, slightly fleshy, glabrous, shallowly pinnatilobed to pinnatifid; lateral lobes usually 4 or 5 pairs, deltoid, falcate, or broadly deltoid-triangular, patent to hamate-recurved, proximal margin ± entire, distal margin ± denticulate, apex acute; interlobes often bordered reddish, margin subentire; terminal lobe triangular to 3-partite, margin ± entire, apex acute to subobtuse. Scapes brownish or purplish green, often overtopping leaves, arachnoid. Capitulum 2–3 cm wide. Involucre 5–8 mm wide, base narrowly rounded. Outer phyllaries 9–14, light green, sometimes suffused purplish, ± not imbricate, ovate to broadly lanceolate, outermost ones 4–6(–7) × 1.7–2.8 mm and 1/4–1/3 as long as inner ones, loosely appressed to erect, border indistinct, whitish light green, with a gradual transition, and 0.1–0.4 mm wide, margin ± glabrous, apex with a ± thick suberect horn to 2 mm; inner phyllaries 1–1.4 cm, apex with thick short horn and often laterally dilated. Ligules light yellow; outer ligules flat, outside striped brownish purple; inner ligules with yellow teeth at apex; ligule tube pubescent. Stigmas pure yellow. Anthers polliniferous; pollen grains regular in size. Achene light grayish straw-colored brown, 3.7–4.2 × 0.8–0.9 mm; body ± densely spinulose above, subgradually narrowing into a subcylindric 0.8–1 mm cone, spinules thin, usually suberect, and not squamulose; beak 7–9 mm. Pappus bright white, 5–6 mm. Fl. late spring and early summer. Sexual.

Subsaline pastures, grasslands; 600–1800 m. Gansu, Qinghai, Xinjiang [Kazakhstan, Kyrgyzstan].

Reports of *Taraxacum bicorne* from Nei Mongol and Ningxia (Higher Pl. China 11: 779. 2005) remain to be proven.

12. Taraxacum sect. **Macrocornuta** Soest, Acta Bot. Neerl. 9: 304. 1960.

大角蒲公英组 da jiao pu gong ying zu

Leaves deep green and suffused purplish or spotted on interlobes, usually thin, not thickened; petiole ± unwinged; leaf blade undivided to pinnatisect in a complicated manner. Outer phyllaries dark green, blackish green, or mid-green but often with a purplish apex or borders or entirely suffused purplish, linear-lanceolate to ovate-lanceolate, usually arcuate to patent or rarely erect-patent, apex callose to corniculate; inner phyllaries often of unequal width, apex flat to horned. Stigmas usually discolored. Achene grayish straw-colored brown, usually 3–4 × 0.8–1 mm; body ± densely spinulose above, subabruptly to ± gradually narrowing into a subcylindric to cylindric 0.4–2 mm cone, spinule usually long, thin, and erect-patent; beak usually longer than 7–8 mm, thin. Pappus snow white.

About 25 species: centered in the region from Iran to C Asia; one species in China.

Taraxacum sect. *Macrocornuta* in China requires additional study where only one species was identified with certainty, but the diversity might be higher.

Taraxacum sect. *Macrocornuta* was not subjected to a taxonomic revision. The names published on the material from the vicinity of China form a complex of agamospermous and sexual populations, and without a field population study it is difficult to delimit individual taxonomic units. *Taraxacum alatavicum* Schischkin (Fl. URSS 29: 477, 731. 1964), *T. lipskyi* Schischkin (Fl. Turkmen. 7: 383. 1960), and *T. longipyramidatum* Schischkin (Fl. URSS 29: 489, 735. 1964) were reported from Xinjiang (C. H. An, Fl. Xinjiang. 5: 420, 425, 426. 1999; FRPS 80(2): 37, 48, 49. 1999), but both the complexity of the group and the lack of convincing material to prove the records make it advisable not to include these names in the present treatment. *Taraxacum wallichii* Candolle is a sexual taxon described from India; the name usually covers the whole section in the literature. We have failed to find any Chinese material approaching the morphology of *T. wallichii*.

The name *Taraxacum repandum* N. Pavlov refers to a taxon occurring in southwesternmost Tian Shan in Kazakhstan. It is a morphologically peculiar species, rather isolated in the flora of C Asia, and difficult to assign to a section. It might belong to *T.* sect. *Macrocornuta* as a marginal member, but further study is needed. We consider the report of its occurrence in China (FRPS 80(2): 63. 1999) as an error.

93. Taraxacum multiscaposum Schischkin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 8. 1937.

多莛蒲公英 duo ting pu gong ying

Herbs 12–25 cm tall. Petiole purple, unwinged; leaf blade mid-green with a pinkish midvein, narrowly oblanceolate, 4–17 × 1.5–3 cm, subglabrous to glabrous, shallowly pinnatilobed to pinnatisect but sometimes undivided and margin dentate; lateral lobes usually 2–4 pairs, deltoid to narrowly triangular, usually patent, proximal margin ± entire, distal margin ± entire or rarely remotely denticulate, apex subacute; interlobes broad, margin subentire; terminal lobe ± triangular, margin ± entire, apex subacute. Scapes purple, overtopping leaves, glabrescent. Capitulum 2.5–3.5 cm wide. Involucre ca. 1 cm wide, base rounded. Outer phyllaries 8–12, light green, slightly pruinose, and later suffused brownish pink, not imbricate, ovate to broadly lanceolate, outermost ones 4–7 × 2.5–4 mm and 1/3–1/2 as long as inner ones, reflexed with tips pointing toward scape, border indistinct, membranous, or pinkish and ca. 0.1 mm wide, margin ± glabrous, apex flat to corniculate; inner phyllaries 1.2–1.4 cm, apex dark corniculate. Ligules light yellow; outer ligules flat, outside striped faintly light grayish green; inner ligules with

yellow or light grayish teeth at apex; ligule tube pubescent. Stigmas light grayish green. Anthers polliniferous; pollen grains regular in size. Achene light grayish straw-colored brown, 3.7–4.2 × 0.7–0.9 mm; body ± densely spinulose above or often almost throughout, ± gradually narrowing into a subcylindric 1–1.5mm cone, spinules thin and usually suberect; beak 6–8 mm. Pappus bright white, 5–6 mm. Fl. spring and early summer. Sexual. 2*n* = 16.

Ruderal sites, pastures, along roads and paths, grasslands; 1200–2000 m. W Xinjiang [Kazakhstan].

13. **Taraxacum** sect. **Atrata** Kirschner & Štěpánek, **sect. nov.**

黑蒲公英组 hei pu gong ying zu

Type: *Taraxacum subglaciale* Schischkin.

Plantae alpinae vel subnivales graciles, foliis plerumque indivisis, lobulatis, lineari-lanceolatis vel oblongo-lanceolatis, scapis plerumque glaberrimis, phyllariis involucralibus exterioribus non imbricatis vel inconspicue imbricatis, anguste lanceolatis usque lanceolatis, plerumque in parte media latissimis, subobtusis, planis vel callosis, raro minute corniculatis, paucis vel mediocriter numerosis (7 ad 15), atro-viridibus vel obscure viridibus, albo- vel pallidius marginatis, marginibus distinctis vel inconspicuis, 0.1–0.6 mm latis, glabris vel raro sparsissime ciliatis, phyllariis interioribus planis vel interdum callosis, acheniis plerumque 4–5.5 mm longis (pyramide inclusa), omnino laevibus vel raro sublaevibus et tuberculis sparsis minutissimis in parte superiore praeditis, pyramide carentibus vel in pyramidem indistinctam, raro late conicam sensim abientibus, rostro crassiusculo disrumpente 1.5–5(–7) mm longo, pappo albo-lutescente 4–7 mm longo.

Plants delicate, usually glabrous to subglabrous. Petiole unwinged; leaf blade usually narrow, undivided or shallowly lobed. Capitulum often nodding after anthesis. Outer phyllaries 7–15, blackish green to dark green, ± of equal length, appressed, loosely appressed, or rarely erect, narrowly lanceolate to lanceolate, usually broadest in middle, almost unbordered to bordered, margin usually glabrous but seldom sparsely ciliate, apex without a horn but sometimes callose. Ligules yellow, lilac, pinkish to violet. Achene usually grayish straw-colored brown to blackish brown, (3.9–)4–5(–5.7) × 0.8–1 mm; body smooth or less often sparsely minutely tuberculate above, cone absent or achene body gradually narrowing into an indistinct cone, cone (when developed) broadly conical to conical and 0.4–0.8 mm; beak 1.5–5(–7) mm, ± thick, easily breaking off. Pappus yellowish white or white, 4–7 mm.

About 15 species: C Asia; five species (one endemic) in China.

Taraxacum sect. *Atrata* has a center of diversity in NW China (W Xinjiang), Kazakhstan, Kyrgyzstan, NW Mongolia, and perhaps elsewhere in C Asia.

Taraxacum sect. *Oligantha* is the closest section to *T.* sect. *Atrata* but differs from it in having densely hairy scapes, imbricate and hairy outer phyllaries (often hairy on adaxial and/or abaxial surfaces and ciliate) of paler color, outer phyllaries with a blackish corniculate apex, achene beak very thick (not caducous), and pappus fragile. Another similar taxon, *T. glabrum* of *T.* sect. *Glabra*, differs in the well-developed distinctly narrower cone and thin beak.

In addition to the species given below, there is another name, *Taraxacum alpigenum* Dshanaëva (Fl. Kirgizsk. S.S.R. 1: 116. 1967), based on the material from a border range between W Xinjiang and Kyrgyzstan (Torugart Range). We have not seen the original material, and the protologue does not give enough facts to compare the name with the other members of the section (with the exception of the achene characters). If it proves to be a separate species, it should be included in the Chinese flora.

1a. Ligules deep pink to pinkish violet ..... 98. *T. lilacinum*
1b. Ligules yellow.
2a. Achene 4.5–5 mm; outer phyllaries 10–15.
3a. Stigmas blackish green; outer phyllaries ovate to ovate-lanceolate; achene beak 4–5 mm ..... 94. *T. sinotianschanicum*
3b. Stigmas deep yellow; outer phyllaries narrowly lanceolate; achene beak 1.5–3 mm ..... 95. *T. goloskokovii*
2b. Achene 3.9–4.1 mm; outer phyllaries 7–10.
4a. Achene body sparsely spinulose above; leaf blade oblanceolate ..... 96. *T. pseudoatratum*
4b. Achene body ± smooth; leaf blade ± linear ..... 97. *T. subglaciale*

94. Taraxacum sinotianschanicum Tzvelev, Novosti Sist. Vyssh. Rast. 24: 220. 1987.

东天山蒲公英 dong tian shan pu gong ying

Herbs 5–12 cm tall. Petiole pale green, ± unwinged; leaf blade probably mid-green, oblanceolate, 6–8 × 1.5–2 cm, glabrous, pinnatilobed, midvein pale green; lateral lobes 2 or 3 pairs, triangular to deltoid, to 1 cm, usually patent, margin usually entire; interlobes short, broad, margin ± entire; terminal lobe triangular. Scapes brownish green, ± equaling leaves, glabrous. Capitulum 2–3 cm wide. Involucre 8–11 mm wide, base rounded. Outer phyllaries 11–14, almost black, ± imbricate, ovate to ovate-lanceolate, outermost ones 5–7 × 2.5–4 mm and ca. 1/2 as long as inner ones, ± appressed to suberect, unbordered, margin ± glabrous, flat below apex; inner phyllaries 1.3–1.7 cm, flat below apex. Ligules yellow; outer ligules outside striped grayish pink; inner ligules with purple to blackish teeth. Stigmas blackish green. Anthers polliniferous. Achene grayish straw-colored brown, 4.5–5.2 × 0.9–1 mm; body ± smooth or apically very sparsely minutely tuberculate, very indistinctly and gradually narrowing into a broadly conic 0.6–0.9 mm cone or cone not discernible at all; beak 4–5 mm, thick. Pappus ± white, 6–7 mm. Fl. summer.

● Alpine slopes; ca. 3500 m. W Xinjiang (Tian Shan).

Taraxacum sinotianschanicum is known from the type specimen only. It deviates from the most common pattern of *T.* sect. *Atrata* in having outer phyllaries ± imbricate and of a broader shape.

95. Taraxacum goloskokovii Schischkin, Fl. URSS 29: 748. 1964.

小叶蒲公英 xiao ye pu gong ying

Herbs 5–8 cm tall. Petiole pinkish green, ± unwinged; leaf blade mid-green, linear to linear-oblanceolate, 5–8 × (0.3–)0.5–0.7(–1.2) cm, glabrous, undivided, margin entire or with irregular short linear lateral teeth (1–3 on each side) or pinnatisect; lateral lobes 2 or 3 pairs, linear-triangular, to 5 mm, usually subrecurved, margin entire; interlobes narrow, margin ± entire; terminal lobe linear-triangular, base sagittate. Scapes brownish green, equaling leaves, glabrous. Capitulum ca. 1.5 cm wide. Involucre 6–7 mm wide, base ± rounded. Outer phyllaries 10–15, deep grayish green, not imbricate, narrowly lanceolate, outermost ones 5–6(–7) × 1.3–2 mm and ca. 1/2 as long as inner ones, ± appressed to loosely appressed, border paler, narrow, and indistinct or sharply delimited and 0.1–0.3 mm wide, margin glabrous, flat to blackish callose below obtuse apex; inner phyllaries 1–1.2 cm, flat to subcorniculate below apex. Ligules yellow; outer ligules outside striped pinkish black. Stigmas deep (pale brownish) yellow. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, ca. 5 × 0.9–1 mm; body ± smooth or apically with a few minute tubercles, cone not discernible; beak 1.5–3 mm, ± thick. Pappus ± white, ca. 5.5 mm. Fl. summer. Agamosperm.

Along alpine streams, stream terraces; 3000–3700 m. SW Xinjiang [Kazakhstan].

96. Taraxacum pseudoatratum Orazova, Fl. Kazakhst. 9: 491. 1966.

窄边蒲公英 zhai bian pu gong ying

Taraxacum atratum Schischkin, Fl. URSS 29: 743. 1964, not G. E. Haglund (1948).

Herbs 5–10 cm tall. Petiole ± green, narrowly winged; leaf blade mid-green, ± oblanceolate, 5–8 × 1.2–2 cm, glabrous, undivided to shallowly sinuate-lobed, margin entire; lateral lobes 1 or 2 pairs, broadly triangular, to 5 mm, ± patent, margin entire; interlobes not distinctly developed, margin entire; terminal lobe broadly triangular, margin entire. Scapes brownish green, equaling leaves, glabrous. Capitulum ca. 2 cm wide. Involucre 8–10 mm wide, base narrowly rounded. Outer phyllaries 7–9, blackish green to deep grayish green, not imbricate, lanceolate to narrowly lanceolate, often broadest in middle or tapering from base, outermost ones 5–7 × 1.5–2.3 mm and ca. 1/2 as long as inner ones, ± appressed, border paler, narrow, and not always distinct or to 0.3 mm wide, margin glabrous or rarely sparsely ciliate, apex ± flat; inner phyllaries 1.1–1.4 cm, apex flat. Ligules yellow; outer ligules outside striped grayish pink. Stigmas yellow to dirty yellow. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, ca. 4 × 0.9–1 mm; body with sparse minute spinules or tubercles in a narrow zone in upper part, gradually narrowing into a conic 0.4–0.5 mm cone; beak ca. 5 mm, not thin. Pappus ± white, ca. 6 mm. Fl. summer. Agamosperm.

Alpine or subalpine grasslands; probably above 3000 m. Xinjiang [Kazakhstan].

97. Taraxacum subglaciale Schischkin, Fl. URSS 29: 743. 1964.

寒生蒲公英 han sheng pu gong ying

Herbs 4–8 cm tall. Petiole purplish, unwinged; leaf blade mid-green, ± linear, 4–6 × 0.5–0.8 cm, glabrous, usually with a few lobules or pinnatisect but sometimes undivided; lateral lobes 1 or 2 pairs, linear-triangular to linear, usually ± recurved, margin entire; interlobes narrow, margin entire; terminal lobe linear, elongated-lingulate, basal segments ± linear and subrecurved. Scapes brownish green, overtopping leaves, glabrous. Capitulum ca. 1.5 cm wide. Involucre 5–6 mm wide, base subobconic. Outer phyllaries 8–10, middle part deep grayish green with a very gradual transition into paler border, not imbricate, ± narrowly lanceolate, outermost ones 4.5–5 × ca. 1.5 mm and ca. 1/3 as long as inner ones, ± appressed to loosely appressed, border narrow, paler grayish green to whitish, and 0.2–0.3 mm wide, margin glabrous, flat below apex; inner phyllaries 1–1.2 cm, ± flat to blackish callose below apex. Ligules yellow. Stigmas yellowish green. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 3.9–4.1 × ca. 0.9 mm; body ± smooth or apically with a few almost invisible tubercles, cone not discernible or broadly conic and 0.6–0.8 mm; beak 4–4.5 mm, ± thick. Pappus ± white, ca. 5 mm. Fl. summer. Agamosperm.

Alpine slopes, on moist shallow soils; 3500–4500 m. Xinjiang [Kazakhstan].

98. Taraxacum lilacinum Schischkin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 4. 1937.

紫花蒲公英 zi hua pu gong ying

Herbs 4–12 cm tall. Petiole green to pinkish, unwinged; leaf blade mid-green, ± spatulate-oblanceolate, 2.5–8 × 0.5–1.7 cm, glabrous, undivided, margin usually remotely dentate or less often with remote short triangular lobules, apex subacute. Scapes brownish green, usually overtopping leaves, glabrous. Capitulum 2–2.5 cm wide. Involucre 7–9 mm wide, base broadly rounded. Outer phyllaries 8–13, middle part deep grayish green to blackish green, ± not imbricate, ± lanceolate, often broadest in middle, outermost ones 4–5(–8) × 1.5–2.3 mm and 1/2–2/3 as long as inner ones, ± appressed, unbordered or with a gradual transition into paler to whitish 0.1–0.3 mm wide border, margin glabrous, flat below apex; inner phyllaries 1.1–1.4 cm, ± flat below apex. Ligules deep pink to light pinkish violet; outer ligules faintly striped deeper pink. Stigmas dark (probably dark green). Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 4–4.5 × ca. 0.9 mm, smooth to very sparsely minutely tuberculate above, cone indistinct with body very gradually narrowing in beak; beak 2.5–4 mm, ± thick. Pappus white, 5–6 mm. Fl. summer. Agamosperm.

Wet alpine slopes, gravelly sites, alpine meadows; 3000–3800 m. Xinjiang (Ketmen Tau, Tian Shan) [Kazakhstan, Kyrgyzstan].

Plants morphologically similar to *Taraxacum lilacinum* but sexual have been reported (D. T. Zhang et al., Acta Bot. Boreal.-Occid. Sin. 17: 1–7. 1997), and their status remains to be studied.

14. Taraxacum sect. **Arctica** Dahlstedt, Acta Fl. Sueciae 1: 37. 1921.

北极蒲公英组 bei ji pu gong ying zu

Plants small, delicate. Leaves usually subglabrous to glabrous; petiole unwinged or rarely narrowly winged; leaf blade undivided or shallowly to deeply lobed, indentation sparse. Outer phyllaries usually few, 8–11(–15), ± blackish green to dark green, broadly ovate to broadly lanceolate, usually less than 5–6 mm, ± appressed to loosely appressed, rarely erect, unbordered or bordered whitish or purplish, margin usually glabrous or rarely ciliate, apex usually corniculate. Ligules yellow, pale yellow, whitish, white, or pinkish. Stigmas discolored. Achene brown, olivaceous brown, blackish, reddish, straw-colored brown, gray, etc., usually 3.5–4.5 mm, not thick; body very sparsely to ± densely spinulose and/or tuberculate above, ± gradually narrowing into a conic to subconic 0.3–0.8 mm cone; beak to 5 mm, thin to slightly thickened. Pappus white.

More than 40 species: tundra of European Arctic, Alps of Europe, mountains of C Asia; one species (endemic) in China.

Taraxacum sect. *Arctica* has rarely been reported to occur in C Asia or China, and reports (e.g., FRPS 80(2). 1999) did not cover members of the section. However, there are several taxa described from that territory that belong to it on the basis of achene and outer phyllary characters. They are *T. junatovii* Tzvelev (SW Mongolia), *T. heptapotamicum* Schischkin and *T. atrans* Schischkin (C Tian Shan), and *T. tzvelevii* Schischkin (Tajikistan). *Taraxacum alatopetiolum*, endemic to China, also belongs to this group.

Taraxacum altaicum Schischkin (Sist. Zametki Mater. Gerb. Krylova Tomsk. Gosud. Univ. Kuybysheva 1949(1–2): 6. 1949), reported as a Chinese species in FRPS (80(2): 37. 1999), is a marginal member of *T.* sect. *Arctica* or an intermediate between *T.* sect. *Arctica* and *T.* sect. *Borealia*. It occurs in the Russian part of the Altai and perhaps might be found in northernmost Xinjiang. However, the description in FRPS does not correspond to the characters of the species, and no Chinese material of this species has been revised by us.

99. Taraxacum alatopetiolum D. T. Zhai & C. H. An, J. Aug. 1st Agric. Coll. 18(3): 2. 1995.

翼柄蒲公英 yi bing pu gong ying

Herbs 4–6 cm tall. Petiole narrowly winged; leaf blade ± mid-green, oblanceolate, 2.5–4.5 × 0.5–0.9 cm, ± glabrous, not divided or margin shallowly pinnatilobed to remotely dentate; lateral lobes or teeth 1 or 2 pairs, triangular, 1–2 mm, patent to subrecurved, margin entire; interlobes broad or not developed in undivided leaves, margin entire; terminal lobe triangular, margin entire, apex subacute. Scapes suffused purplish, ± equaling leaves, arachnoid and densely white arachnoid below capitulum. Capitulum ca. 2 cm wide. Involucre 5–6 mm wide, base rounded. Outer phyllaries 11–15, surface evenly blackish dark gray, ± imbricate, ovate to broadly ovate, outermost ones (2.2–)3–4.5(–5.5) × (2.5–)3–4.2 mm and 1/2–3/5 as long as inner ones, appressed, margin glabrous, apex almost flat in first capitula but black corniculate in later ones; inner phyllaries blackish, 1–1.3 cm, ± flat or corniculate below apex. Ligules golden yellow; outer ligules flat, outside striped gray; floret tube glabrous. Stigmas blackish. Achene blackish brown, 3.7–4.3 × 1–1.1 mm; body sparsely and minutely spinulose or tuberculate above, ± gradually narrowing into a conic 0.5–0.6 mm cone; beak 4–5 mm. Pappus slightly yellowish white, ca. 5 mm. Fl. summer.

● Wet alpine grasslands; ca. 3400 m. Xinjiang.

Taraxacum alatopetiolum is similar to *T. atrans* Schischkin but differs in having more numerous outer phyllaries.

15. Taraxacum sect. **Glabra** Dahlstedt, Acta Fl. Sueciae 1: 36. 1921.

光果蒲公英组 guang guo pu gong ying zu

Herbs small, glabrous. Leaves undivided. Outer phyllaries blackish green, ± not imbricate, ovate-lanceolate to linear-lanceolate, erect to arcuate-patent, without a paler border, margin glabrous, apex acute and ± flat. Achene long, slender, usually 4.3–5.7 × ca. 0.8 mm; body smooth or very sparsely spinulose or tuberculate above, very gradually narrowing into a subcylindric to cylindric 0.4–0.8 mm cone; beak 5–7 mm, thin. Pappus white or yellowish white, 5–6 mm.

Two species: centered in the Asiatic Arctic and reaching mountains of S Siberia and adjacent regions; one species in China.

For differences between *Taraxacum* sect. *Glabra* and *T.* sect. *Atrata* see the description of the latter and comments there.

100. Taraxacum glabrum Candolle, Prodr. 7: 147. 1838.

光果蒲公英 guang guo pu gong ying

Herbs 6–20 cm tall, base glabrous. Petiole purplish, to 10 cm, very narrow, glabrous; leaf blade deep green with a purplish midvein, oblong-spatulate, 2.5–8 × 0.8–1.9 cm, glabrous, undivided, margin entire or remotely sinuate-dentate, apex subobtuse to obtuse; teeth 1–3 pairs, apex obtuse. Scapes brownish green, ± equaling but later overtopping leaves, glabrous. Capitulum 3–4 cm wide. Involucre 7–10 mm wide, base rounded. Outer phyllaries 13–18, dark blackish green, ± not imbricate, ovate-lanceolate to narrowly lanceolate, outermost ones 5–7 × 1.9–2.6 mm and ca. 1/3 as long as inner ones, erect to patent, paler border not developed, margin glabrous, apex subacute and ± flat; inner phyllaries 1.2–1.5 cm, ± flat near apex. Ligules deep yellow; outer ligules outside faintly striped grayish green; inner ligules with dark apical teeth. Stigmas grayish green. Anthers polliniferous; pollen grains irregular in size. Achene grayish light brown, 4.8–5.5 × ca. 0.8 mm; body smooth, very gradually narrowing into subcylindric to a cylindric (0.6–)0.8 × ca. 0.3 mm cone; beak 5–7 mm. Pappus yellowish white, 5–6 mm. Fl. summer. Agamosperm. $2n = 24$.

Wet mossy subalpine to alpine sites, vicinity of springs; 1600–3000 m. N Xinjiang [Kazakhstan, Mongolia, Russia (Altai)].

16. Taraxacum sect. **Borealia** Handel-Mazzetti, Monogr. Taraxacum, [xi]. 1907.

北方蒲公英组 bei fang pu gong ying zu

Plants medium-sized, rarely robust. Leaves usually mid-green, not thickened, sparsely arachnoid to subglabrous; petiole broadly winged to narrowly winged; leaf blade shallowly to deeply pinnatilobed to pinnatisect; lobes most often patent. Scapes usually growing laterally from leaf rosette, not from center. Outer phyllaries green to blackish green, ± not imbricate, lanceolate to ovate, loosely appressed, erect or erect-patent, usually with a paler broad to narrow border, margin glabrous to sparsely ciliate, apex with a conspicuous horn or sometimes only so in later capitula. Ligules yellow or whitish. Achene grayish straw-colored brown, rarely brown or reddish, usually 4–5 × 0.9–1.1 mm; body shortly spinulose above, usually subabruptly narrowing into a conic to subcylindric 0.5–1.4 mm cone; beak usually 6–11 mm, thin. Pappus white or yellowish white.

About 80 species: mostly in circumpolar subarctic regions, many in mountains of C Asia; three species (two endemic) in China.

Several species of *Taraxacum* sect. *Borealia* were described from the vicinity of the Chinese border: *T. karakoricum* Soest from the Karakoram of Pakistan, *T. stanjukoviczii* Schischkin from Upper Badakhshan of Tajikistan, and *T. pavlovii* Orazova from SE Kazakhstan. They have not been found in the material available but their occurrence in China is not improbable.

Variation is often but not always observed in the development of horns in the outer phyllaries. The first capitula to blossom often have flat or callose outer/inner phyllaries while later capitula have a distinct horn on the phyllaries.

1a. Ligules white ..... 103. *T. pingue*
1b. Ligules yellow.
2a. Outer phyllaries with a sharply delimited pale 0.1–0.4 mm wide border ..... 101. *T. roborovskyi*
2b. Outer phyllaries with a gradual transition from dark middle part into a pale 0.6–1 mm wide border ..... 102. *T. qirae*

101. Taraxacum roborovskyi Tzvelev, Novosti Sist. Vyssh. Rast. 24: 215. 1987.

高山蒲公英 gao shan pu gong ying

Herbs 20–35 cm tall. Petiole pinkish, narrowly winged; leaf blade mid-green with a pinkish midvein, oblanceolate, 15–25 × 3–4 cm, subglabrous, remotely and shallowly pinnatilobed; lateral lobes 2 or 3 pairs, deltoid, patent, margin ± entire; interlobes broad and long, margin entire; terminal lobe helmet-shaped to triangular, margin entire. Scapes brownish green, overtopping leaves, sparsely arachnoid below capitulum. Capitulum 30–40 mm wide. Involucre 1–1.2 cm wide, base rounded. Outer phyllaries ca. 19, black-green with sharply delimited white border, ± not imbricate, lanceolate, outermost ones 12–14 × 2.5–3.5 mm and 3/4–4/5 as long as inner ones, ± appressed, border (0.1–)0.3–0.4 mm wide, margin ± glabrous, with a thick large horn ca. 2 mm below apex; inner phyllaries 1.3–1.6 cm, with a thick horn below apex. Ligules yellow; outer ligules flat, outside striped purplish gray; inner ligules with purple teeth. Stigmas grayish green. Anthers without pollen. Achene unknown. Fl. summer. Agamosperm.

● Mountain meadows; probably above 2500 m. W Xinjiang (Tian Shan).

Taraxacum roborovskyi is known from the type specimen only.

102. Taraxacum qirae D. T. Zhai & C. H. An, J. Aug. 1st Agric. Coll. 18(3): 3. 1995.

策勒蒲公英 ce le pu gong ying

Herbs 5–12 cm tall. Petiole usually suffused purplish, winged in some leaves, base arachnoid; leaf blade mid-green with a green to pinkish midvein, ± oblanceolate, 2–9 × 1–1.5 cm, subglabrous, shallowly pinnatilobed to remotely dentate; lateral lobes or teeth 3–5 pairs, broadly triangular, 2–4 mm, usually recurved, margin entire; interlobes broad or not developed in undivided dentate leaves, margin entire; terminal lobe triangular, margin entire, apex subobtuse, basal lobules or teeth ± recurved. Scapes suffused purplish, ± overtopping leaves, sparsely arachnoid to subglabrous. Capitulum 2.5–3 cm wide. Involucre 8–10 mm wide, base ± rounded. Outer phyllaries 8–11, middle part blackish with a gradual transition into a whitish to white border, not imbricate, narrowly lanceolate, outermost ones 9–14 × 2–4 mm and ca. 3/4 as long as inner ones, ± loosely appressed, border 0.6–1 mm wide, margin glabrous, apex conspicuously corniculate; inner phyllaries blackish, 1.3–1.8 cm, corniculate below apex. Ligules yellow; outer ligules flat, outside striped gray; inner ligules with gray apical teeth. Stigmas blackish. Anthers polliniferous; pollen grains irregular in size. Achene ochraceous brown when unripe but later getting darker and becoming dark brown, 4.2–4.5 × 1–1.1 mm; body spinulose above, ± abruptly narrowing into a subconic 0.8–0.9 mm cone, spinules thin, erect-patent, and acute; beak 5–6 mm. Pappus ± white, ca. 6 mm. Fl. summer. Agamosperm.

● Mountain meadows and pastures; ca. 3100 m. S Xinjiang (Qira).

Taraxacum qirae, a species described from the Kunlun Shan, is clearly a member of *T.* sect. *Borealia*. Its closest relative, *T. pavlovii* Orazova, growing in C Tian Shan of Kazakhstan, differs in having substantially more numerous outer phyllaries and totally different achenes. The geographically closest member of this section, *T. karakoricum* Soest, lacks the whitish borders to the outer phyllaries and has a different leaf shape. The latter species might be found in China as it was described from the Karakoram of Pakistan, not far from the Chinese border.

103. Taraxacum pingue Schischkin, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 7: 3. 1937.

尖角蒲公英 jian jiao pu gong ying

Herbs 5–10 cm tall. Petiole usually suffused pinkish, winged, base arachnoid; leaf blade mid-green, ± oblanceolate to narrowly ovate, 4–8 × 1–2.5 cm, sparsely arachnoid, undivided and dentate to remotely shallowly lobulate, midvein pale pur-

plish but distally green; interlobes not developed; leaf apex subobtuse to acute. Scapes brownish green, subequaling leaves, arachnoid. Capitulum 3–4 cm wide. Involucre 1.1–1.5 cm wide, base rounded. Outer phyllaries 13–19, ± blackish green with a whitish border, not imbricate, ovate-lanceolate, largest ones 5–11 × 2–3.5 mm and ca. 3/5 as long as inner ones, ± loosely appressed, border membranous and to 0.5 mm wide, margin sparsely ciliate to glabrous, apex with a conspicuous thick horn; inner phyllaries blackish, 1.3–1.9 cm, corniculate below apex. Ligules white; outer ligules flat, outside striped grayish purple. Stigmas blackish green. Anthers polliniferous; pollen grains irregular in size. Achene light straw-colored brown, 4.5–4.8 × ca. 1 mm; body subsparsely spinulose above, subabruptly narrowing into a thick conic 0.7–0.8 mm cone; beak 6.5–8 mm. Pappus ± white, ca. 8 mm. Fl. summer. Agamosperm.

Alpine meadows, below glaciers; 2800–3000 m. NW Xinjiang (summit area of Saur Mountains) [NE Kazakhstan].

Reports of *Taraxacum pingue* from Hejing Xian and Taxkorgan Xian (FRPS 80(2): 46. 1999) require further study.

17. Taraxacum sect. **Parvula** Handel-Mazzetti, Monogr. Taraxacum, [xi]. 1907.

小花蒲公英组 xiao hua pu gong ying zu

Plants usually small to medium-sized. Petiole usually narrowly winged; leaf blade light grayish green or glaucous green, pinnatilobed to pinnatisect; lobes not numerous, triangular, simple, margin usually entire or sparsely denticulate. Involucre usually 7–10 mm wide, base subobconic to ± rounded. Outer phyllaries not numerous, usually 8–12(–20), pale green to light glaucous green with a narrow darker middle strip and paler surface, narrowly lanceolate to ± ovate, subimbricate, appressed to erect but sometimes some arcuate, border whitish and very narrow. Ligules yellow. Achene pale straw-colored brown, ochraceous, pale reddish straw-colored brown, or grayish to whitish straw-colored brown, 3.8–5.2 × 0.7–0.9(–1) mm; body sparsely spinulose above, usually very gradually narrowing into a subcylindric 0.8–1.4 mm cone; beak 6–8 mm, thin. Pappus white, 5–7 mm. Sexual or agamospermous.

About 20 species: centered in the Himalaya, mainly in India, Nepal, and Pakistan; five species (two endemic) in China.

The name *Taraxacum indicum* Handel-Mazzetti (Monogr. Taraxacum, 50. 1907) (see FRPS 80(2): 26. 1999), according to the majority of the syntypes, belongs to *T.* sect. *Parvula*. However, the heterogeneity of the syntypes and their unsatisfactory quality do not allow a safe interpretation. The name requires further detailed study and is not interpreted in the present treatment.

1a. Pollen absent ..... 105. *T. dasypodum*
1b. Pollen present.
2a. Stigmas ± yellow ..... 104. *T. parvulum*
2b. Stigmas pale greenish yellow to dark green.
3a. Outer phyllaries 11–14, 1.5–2.2 mm wide ..... 108. *T. mitalii*
3b. Outer phyllaries 16–20, 3.5–5 mm wide.
4a. Achene grayish light brown, 4.8–5 mm; cone 1–1.2 mm ..... 107. *T. consanguineum*
4b. Achene pale yellowish brown to pale grayish ivory white, 3.5–4.5 mm; cone (0.6–)0.7–0.9 mm ..... 106. *T. vendibile*

104. Taraxacum parvulum Candolle, Prodr. 7: 149. 1838.

小花蒲公英 xiao hua pu gong ying

Taraxacum himalaicum Soest.

Herbs 5–10 cm tall, small. Petiole pale green to pinkish, arachnoid at base, narrow to narrowly ± winged; leaf blade pale grayish green, oblanceolate to broadly oblanceolate, 4–9 × 1.2–2 cm, almost glabrous, pinnatilobed; lateral lobes in 1–3 pairs, triangular to deltoid, recurved, margin ± entire; interlobes long, margin ± entire; terminal lobe triangular-sagittate, margin entire, apex ± acute. Scapes brownish green, ± equaling leaves, arachnoid. Capitulum 1.5–2.5 cm wide. Involucre 6–8 mm wide, base broadly subconic to ± rounded. Outer phyllaries 8–10, pale grayish green, ± imbricate, ± lanceolate or narrowly so, outermost ones (4–)4.5–5.5 × (1.5–)1.8–2.3 mm and 1/3–1/2 as long as inner ones, appressed, narrow middle part blackish green, border getting paler from pale greenish near middle to whitish green near margin and 0.2–0.3 mm wide, margin subglabrous, apex bordered pinkish and ± flat; inner phyllaries 1–1.2 cm, apex ± flat. Ligules yellow; outer ligules outside faintly striped grayish pink. Stigmas yellow to pale grayish yellow. Anthers polliniferous; pollen grains ± regular in size. Achene pale brownish orange, 3.8–4.6 × 0.8–0.9 mm; body ± smooth below, subsparsely spinulose above, apically gradually narrowing into a subcylindric (0.8–)1–1.2(–1.4) mm cone, spinules short and thin; beak ca. 6 mm. Pappus white, 6–7 mm. Fl. late spring to summer. Predominantly sexual.

Grassland slopes, pastures, river terraces; 2000–4500 m. Sichuan, Xinjiang, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal].

The report of *Taraxacum parvulum* from Xinjiang is based on the report by Soest (Wentia 10: 38. 1963). The reports from NE Qinghai and N Shanxi (FRPS 80(2): 26. 1999; Higher Pl. China 11: 772. 2005) are incorrect.

105. Taraxacum dasypodum Soest, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 265. 1961.

丽江蒲公英 li jiang pu gong ying

Herbs 4–7 cm tall, small, base thickened by remnants of old petioles and arachnoid. Petiole pale green, ± winged; leaf blade pale grayish green, oblanceolate to broadly oblanceolate, 4–7 × 1.2–2 cm, sparsely arachnoid to glabrescent, pinnatilobed or shallowly so; lateral lobes 2 or 3, triangular to deltoid, ± patent to recurved, margin entire; interlobes short, margin entire; terminal lobe triangular, margin entire or sometimes with a single tooth, apex subobtuse. Scapes brownish green, ± equaling leaves, arachnoid. Capitulum ca. 2 cm wide. Involucre

6–7 mm wide, base broadly subconic. Outer phyllaries 8–11, pale green, ± imbricate, ovate to ovate-lanceolate, outermost ones 3–5 × 1.8–2.1 mm and ca. 1/2 as long as inner ones, appressed, narrow middle part blackish green, border getting paler from pale greenish near middle to whitish green near margin and 0.6–0.7 mm wide, margin subglabrous, apex subobtuse, bordered pinkish, and with a blackish callosity or ± flat; inner phyllaries 10–11 × ca. 2 mm, callose near apex. Ligules yellow; outer ligules outside faintly striped grayish pink; inner ligules with black apical teeth. Stigmas yellow. Anthers without pollen. Achene (not fully ripe) deep straw-colored brown, ca. 5 mm; body almost smooth, with sparse minute tubercles or smooth, apically indistinctly and very gradually narrowing into a subcylindric 1–1.3 mm cone; beak 3–4 mm. Pappus white, ca. 5 mm. Fl. late spring to summer. Agamosperm.

● Dry mountain pastures; ca. 2700 m. NW Yunnan (Lijiang).

Taraxacum dasypodum is known only from the type gathering.

106. Taraxacum vendibile Kirschner & Štěpánek, **sp. nov.**

普通蒲公英 pu tong pu gong ying

Type: China. Yunnan: “Zhongdian [中甸] plateau (north), Napa Hai [纳帕海], meadows 7 km to NW of pass,” 4000–4230 m, Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4070 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Sichuan: “Limes inter Sichuan et Tibet, opp. Dêgê [德格], in oppidi vicinitate meridionali,” ca. 3250 m, 4 Jun 1992, *L. Businská & R. Businský 3*, cultivated as JŠ 5114 (PRA); *ibidem*, ca. 3500 m, 6 Jun 1992, *L. Businská & R. Businský 4*, cultivated as JŠ 5119, JŠ 5125 (PRA). Xizang: “Nyingchi [林芝] (= Linchi), in vicinitate orientali,” ca. 3400 m, 27 Jul 1992, *L. Businská & R. Businský 11*, cultivated as JŠ 5103 (PRA); “Yarlung-Tsang-Pu [雅鲁藏布江] (Brahmaputra), regio curvaturae magnae [great bend region],” ca. 3300 m, 21 Jul 1992, *L. Businská & R. Businský 10*, cultivated as JŠ 5086, JŠ 5090 (PRA); “Zayü Co. [察隅县], Salween – Irrawaddy divide, W below No La Pass,” 3600 m, 17 Jun 1999, *R. Businský & L. Businská 9*, cultivated as JŠ 7443 (PRA); “Zayü Co. [察隅县], E side of Zayü Qu [察隅曲] valley system, the confluence ca. 20 km NE of Zayü town [察隅],” 3550 m, 1 Jul 1999, *R. Businský & L. Businská 14*, cultivated as JŠ 7439 (PRA); “Zayü Co. [察隅县], upper valley system of Dulong Jiang [独龙长] (Taron River) W branch,” 3950 m, 24 Jun 1999, *R. Businský & L. Businská 11*, cultivated as JŠ 7451 (PRA); “Zayü Co. [察隅县], Mekong – Salween divide (Hengduan Shan Mts.) [横断山脉], W of Doker La Pass,” 3650 m, 5 Jun 1999, *R. Businský & L. Businská 8*, cultivated as JŠ 7432 (PRA). Yunnan: “Zhongdian [中甸] plateau (north), Napa Hai [纳帕海], meadows 7 km to NW of pass,” 4000–4230 m, Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4067, JK 4068, JK 4071, JK 4074, JK 4075, JK 4076, JK 4077, JK 4078, JK 4079 (PRA); “Opp. Dêqên [德钦] (= Atuntze), in oppidi vicinitate meridio-orientali,” 3300–4200 m, 30 Jun – 1 Jul 1992, *L. Businská & R. Businský 7*, cultivated as JŠ 5135, JŠ 5137 (PRA); “N of Dali [大理], mountain pass, 3581 m,” 8 Oct 2007, *P. Sekerka s.n.*, cultivated as JK 5182 (PRA); “Likiang [丽江],” 1990, *J. Soják s.n.*, cultivated as JK 712 (PRA); “Zhongdian Co. [中甸县], abandoned forest road 16 km NW of Zhongdian [中甸],” 3600–3700 m, 15 May 1999, *R. Businský & L. Businská 2*, cultivated as JŠ 7447 (PRA). Russia. Altai: “Aigulakskiy chrebet Mts., distr. Ust’-Ulagan, meadows at Mortvye Ozera Lake, near Ulaganskiy Pereval Pass,” 1850–1990 m, 2 Jul 1988, *J. Kirschner s.n.*, cultivated as JK 52 (PRA); “Distr. Ust’-Kan, below Yabaganskiy Pereval Pass,” ca. 1300 m, 27 Jun 1988, *J. Kirschner s.n.*, cultivated as JK 36 (PRA); “Distr. Ust’-Kan, rocks above Yabaganskiy Pereval Pass,” ca. 1950 m, 28 Jun 1988, *J. Kirschner s.n.*, cultivated as T 191 (PRA); “Distr. Onguday, Khabarovka, valley of Malyi Il’gumen river,” 29–30 Jun 1988, *J. Kirschner s.n.*, cultivated as JK 59 (PRA); “Distr. Onguday, near confluence of rivers Katun and Chuya,” 1 Jul 1988, *J. Kirschner s.n.*, cultivated as T 190 (PRA).

Plantae agamospermae, mediocriter altae, foliis angustis, pinnatipartitis, lobo terminali parvo, lobis lateralibus 4 ad 9 utrinque, parvis, triangularibus usque anguste triangularibus, interlobiis latis dentatis, petiolo late alato, conspicue roseo-purpureo, scapis dense floccosis, phyllariis involucralibus externis 16 ad 20, erectis usque subpatentibus, ovatis usque lanceolatis, stria centrali griseo-viridi et marginibus latis pallidis, in parte superiore rubro-violaceis, stigmatibus sordide luteis vel luteo-viridibus, acheniis angustis, perpallide stramineis, in pyramidem angustam subcylindricam gradatim abeuntibus.

Herbs 12–16(–25) cm tall, ± medium-sized. Petiole pinkish to purplish, short, ± broadly winged; leaf blade grayish green and slightly suffused reddish brown, oblanceolate to narrowly oblanceolate in outline, usually 8–14 × 1.5–2.5(–4) cm, sparsely arachnoid, deeply pinnatilobed, midvein pale green and adaxially sparsely arachnoid; lateral lobes 4–9, triangular, narrowly triangular, or deltoid, 0.8–1.2 × 4–10 mm, ± patent, proximal margin straight to ± concave and ± entire or sometimes with several minute teeth, distal margin ± straight to slightly sigmoid and entire or with a few teeth; interlobes not spotted, 4–8 mm wide, margin dentate, teeth of variable length and density and with an attenuate apex; terminal lobe ± broadly triangular, distal margin ± straight and entire, apex acute or mucronate. Scapes pinkish to purplish green at base, ± equaling leaves, ± densely floccose-arachnoid. Capitulum ca. 4 cm wide, sometimes nodding after anthesis. Involucre 1–1.1 cm wide, base rounded. Outer phyllaries 16–20, lanceolate to ovate, outermost ones 7–10 × 3.5–4.5 mm and 1/2–2/3 as long as inner ones, erect, erect-patent, or loosely appressed, middle part dark grayish green with a gradual transition into a pale whitish green ca. 1 mm wide border, apical 1/4–1/3 usually suffused purplish, margin sparsely ciliate, apex often slightly recurved, usually flat below tip; inner phyllaries 1.2–1.4 cm, apex flat. Ligules golden yellow; outer ligules ± flat, outside striped dark grayish, with black apical teeth; inner ligules with yellow or red apical teeth. Stigmas dirty yellow to greenish. Anthers polliniferous; pollen grains regular in size. Achene very pale yellowish brown to grayish ivory white, 3.5–4.5 × 0.7–0.9 mm; body narrow, relatively densely shortly spinulose in upper 1/5–1/4, very gradually narrowing into a relatively thick subcylindric (0.6–)0.7–0.9 mm cone, spinules ± erect; beak 8.5–10 mm. Pappus slightly yellowish white, 6–7 mm. Fl. late spring to summer. Agamosperm.

Mountain grasslands and pastures, along mountain paths; 3200–4300 m. W Sichuan, SE Xizang, NW Yunnan [Russia].

A marginal member of *Taraxacum* sect. *Parvula*, *T. vendibile* is widely distributed in Yunnan. While the achene characters (color, narrow shape, a very gradual transition of achene body into the cone) clearly belong to this section, the outer phyllary coloration is quite unique. A comparable pattern is found only in the closely related *T. consanguineum*.

107. Taraxacum consanguineum Kirschner & Štěpánek, **sp. nov.**

近亲蒲公英 jin qin pu gong ying

Type: China. Xizang: "Zayü Co. [察隅县], middle valley system of Dulong Jiang [独龙长] (Taron River) E branch," 3900 m, 22 Jun 1999, *R. Businský & L. Businská s.n.*, cultivated as JŠ 7434 (holotype, PRA; isotypes, MO, PE, PRA).

Paratype: China. Xizang: *ibidem*, *R. Businský & L. Businská s.n.*, cultivated as JŠ 7433 (PRA).

A Taraxaco vendibili Kirschner & Štěpánek *interlobiis foliorum obscure fusco-violaceis, phyllariis involucralibus externis longioribus, stigmatibus obscurioribus et acheniis longioribus fuscogriseisque differt.*

Herbs 12–20 cm tall, ± medium-sized. Petiole pinkish to purplish, short, ± broadly winged; leaf blade deep grayish green and slightly suffused reddish brown, oblanceolate to narrowly oblanceolate in outline, usually 8–14 × 1.5–3 cm, sparsely arachnoid, deeply pinnatilobed, midvein pinkish and adaxially sparsely arachnoid; lateral lobes 4–9, ± triangular, ± patent, distal margin ± straight to slightly sigmoid and entire or with a few teeth, proximal margin straight to ± concave and ± entire but sometimes with several minute teeth; interlobes distinctly colored brownish purple (spot often also covering bases of lateral lobes), broad, margin dentate to lobulate, teeth and lobules of variable length and density and with an attenuate apex; terminal lobe ± broadly triangular to 3-partite, distal margin ± entire, apex acute or mucronate. Scapes pinkish to purplish green at base, ± equaling leaves, ± densely floccose-arachnoid. Capitulum 4–4.5 cm wide. Involucre 1–1.2 cm wide, base rounded. Outer phyllaries 16–20, lanceolate to ovate, outermost ones 9–11 × 3.5–5 mm and 1/2–2/3 as long as inner ones, ± erect-patent, middle part dark grayish green with a gradual transition into a pale whitish green ca. 1 mm wide border, apical 1/4–1/3 usually suffused purplish, margin sparsely ciliate, apex often slightly recurved and usually flat below tip; inner phyllaries 1.2–1.4 cm, apex flat. Ligules golden yellow; outer ligules ± flat, outside striped dark grayish, with black apical teeth; inner ligules with reddish apical teeth. Stigmas pale greenish to greenish, abaxially blackish pilose. Anthers polliniferous; pollen grains regular in size. Achene grayish brown, 4.8–5 × 1–1.1 mm; body narrow, shortly spinulose in upper ca. 1/4, very gradually narrowing into an almost cylindric 1–1.2 mm cone, spinules ± erect; beak 1–1.2 cm. Pappus dirty white, ca. 7 mm. Fl. late spring to summer. Agamosperm.

● Mountain grasslands; ca. 3900 m. SE Xizang.

Taraxacum consanguineum differs from the closely related *T. vendibile* primarily in the color and size of achenes and cone length, in the leaf coloration (a dark spot on the interlobes), longer outer phyllaries, and darker color of stigmas.

108. Taraxacum mitalii Soest, Wentia 10: 46. 1963.

亚东蒲公英 ya dong pu gong ying

Herbs 8–15 cm tall. Petiole usually purplish to pinkish, arachnoid at base, narrow to narrowly winged; leaf blade grayish green, sometimes suffused brownish purple, ± oblanceolate, 7–11(–13) × 1.3–2 cm, arachnoid but later sparsely so, pinnatisect or less often pinnatilobed, midvein light green; lateral lobes 2–4 pairs, triangular to deltoid, recurved, proximal margin straight and ± entire, distal margin usually denticulate and straight or convex but in inner leaves often concave, apex acute; interlobes short, margin often raised and with a few teeth; terminal lobe triangular-sagittate but sometimes hastate, to 3 cm, margin ± entire or often with incisions or lobules, apex ± acute. Scapes brownish purple, subequaling leaves, arachnoid. Capitulum 2.5–3.5 cm wide. Involucre 8–9 mm wide, base ± rounded. Outer phyllaries 11–14, light grayish green, subimbricate, ± lanceolate or ovate-lanceolate, outermost ones 6–7 × 1.5–2.2 mm and 1/2–3/5 as long as inner ones, appressed, some erect-patent, narrow middle part blackish green, border getting paler from pale greenish near middle to whitish green near margin and 0.1–0.3 mm wide, margin subglabrous, apex pinkish and ± callose; inner phyllaries 1.2–1.5 cm, apex ± callose. Ligules yellow; outer ligules outside striped blackish pink; inner ligules with ± yellow apical teeth. Stigmas yellowish green but dark green when dry. Anthers polliniferous; pollen grains irregular in size. Achene light grayish straw-colored brown, 3.9–4.3 × 0.9–1 mm; body ± smooth below, ± densely spinulose above, apically subgradually narrowing into a subcylindric to subconic 0.9–1.1 mm cone, spinules thin and ± erect; beak ca. 7 mm. Pappus white, ca. 5 mm. Fl. late spring to summer. Agamosperm. $2n = 24$.

Mountain pastures and grasslands, along paths; 3000–4300 m. S Xizang [India, Myanmar, Nepal].

Taraxacum mitalii has been mistakenly classified as a member of *T.* sect. *Tibetana*, but leaf, outer phyllary, and achene characters point to *T.* sect. *Parvula*.

18. Taraxacum sect. **Piesis** (Candolle) A. J. Richards ex Kirschner & Štěpánek, Folia Geobot. Phytotax. 28: 297. 1993.

窄苞蒲公英组 zhai bao pu gong ying zu

Pyrrhopappus sect. *Piesis* Candolle, Prodr. 7: 144. 1838.

Involucre usually narrow at base, 4–6 mm wide, rarely 9–10 mm wide. Outer phyllaries linear to linear-lanceolate, usually appressed to erect, border usually pale greenish or pinkish, narrow, and membranous, apex callose to conspicuously corniculate.

Achene only sparsely and shortly spinulose above, gradually to (rarely) subabruptly narrowing into a subcylindric 0.4–1.9 mm cone; beak well developed, 2–7.5 mm. Pappus dirty yellowish to pale pinkish brown. Only sexual, predominantly diploid species.

About eight species: from W Europe to C Asia, Russia (SW Siberia), and China, with highest diversity centered in Turkey and the Caucasus; one species in China.

109. Taraxacum bessarabicum (Hornemann) Handel-Mazzetti, Monogr. Taraxacum, 26. 1907.

窄苞蒲公英 zhai bao pu gong ying

Leontodon bessarabicus Hornemann, Suppl. Hort. Bot. Hafn. 88. 1819.

Herbs 8–17 cm tall. Leaves prostrate to erect-patent, subglabrous; petiole pale green, rarely suffused pinkish, winged; leaf blade mid-green to pale yellowish green, narrowly oblanceolate to narrowly elliptic, 8–18 × 1.5–2.5 cm, almost undivided, dentate, or pinnatisect; lateral lobes 4–6, usually patent, often slightly forward pointing, rarely triangular and downward pointing, distal margin ± convex and with 1(or 2) prominent tooth, apex acuminate; interlobes usually short to indistinct or less often narrowly triangular-elongate, margin usually entire; terminal lobe triangular to elongate, 1–2 × 0.8–1 cm, margin entire or sparsely dentate, apex acuminate to subobtuse. Scapes ± equaling leaves, sparsely arachnoid, rarely with bractlets below capitulum. Capitulum 1–2 cm wide. Involucre almost cylindric, 5–7 mm wide, base narrowly rounded to obconic. Outer phyllaries 14–21, pale green to pale pinkish brown, linear to linear-lanceolate, (4–)5–6.5 × (0.6–)1–1.6(–2) mm, appressed, with an indistinct pale 0.2–0.4 mm wide border, slightly callose to minutely corniculate below apex. Ligules pale yellow; outer ligules subcanaliculate, outside striped reddish or pinkish gray; inner ligules canaliculate, with yellow or reddish apical teeth. Stigmas yellow, dirty yellow, or pale green. Anthers polliniferous; pollen grains regular in size. Achene pale grayish straw-colored brown, (4.5–)5–5.5(–6.5) mm; body sparsely to densely and usually shortly spinulose above, gradually to subabruptly narrowing into a subcylindric 1.1–1.4(–1.7) mm cone; beak 4.5–5 mm. Pappus pale pinkish brown, 5.5–6.5 mm. Fl. Jul–Oct. Sexual. $2n = 16$.

Wet saline meadows and pastures; 400–2000 m. Ningxia, Xinjiang [Kazakhstan, Mongolia, Russia].

The big gap between the common occurrence of *Taraxacum bessarabicum* in Xinjiang and an isolated locality in Ningxia might be a result of imperfect exploration of the regions between them. In particular, the species is to be looked for in W Nei Mongol.

19. Taraxacum sect. **Erythrocarpa** Handel-Mazzetti, Monogr. Taraxacum, [xi]. 1907.

紫果蒲公英组 zi guo pu gong ying zu

Plants usually medium-sized, base without a tunic or with a few old petioles. Petiole unwinged or winged; leaf blade pinnatisect; lateral lobes few to numerous, usually triangular to narrow, margin often dentate or lobulate. Capitulum usually 3–4 cm wide. Outer phyllaries usually 12–20, lanceolate to broadly ovate, long, often imbricate, appressed, loosely appressed, or less often arcuate-recurved, usually distinctly broadly or narrowly bordered, apex usually corniculate or horned. Ligules yellow; floret tube glabrous. Achene red, reddish brown, brown, castaneous, or straw-colored brown, usually 4.3–5.5 mm; body usually densely spinulose above, usually subabruptly narrowing into a distinct cylindric 1–1.5 mm cone, spinules long and thin; beak usually 0.8–1.3 cm. Pappus ± white.

About 40 species: centered in the Mediterranean region and Iran; one species (endemic) in China.

The name *Taraxacum tianschanicum* Pavlov (Vestn. Akad. Nauk Kazakhsk. S.S.R. 8: 30. 1950) was published on the basis of the material from the southwesternmost Tian Shan and probably belongs to *T.* sect. *Erythrocarpa*. It was reported to occur in China (FRPS 80(2): 64. 1999). We failed to find any specimen of this taxon from China. Also, geographically the occurrence of *T. tianschanicum* in China is rather improbable.

110. Taraxacum russum Kirschner & Štěpánek, **sp. nov.**

红蒲公英 hong pu gong ying

Type: China. Guizhou: “Guiyang [贵阳市],” 1996, *P. Štorch s.n.*, cultivated as JK 4023 (holotype, PRA; isotypes, MO, PE, PRA).

Paratypes: China. Guizhou: *ibidem*, *P. Štorch s.n.*, cultivated as JK 4024 (PRA); “Tongzi [桐梓],” ca. 1800 m, 1996, *P. Štorch s.n.*, cultivated as JK 4025 (PRA). Yunnan: “Kunming [昆明市], ‘Stone Forest’ [石林],” 1990, *J. Soják s.n.*, cultivated as JK 711 (PRA); “Yiliang [宜良], weed in hotel garden, 2800 m,” Jun 1995, *A. J. Richards s.n.*, cultivated as JK 4029 (PRA).

Plantae agamospermae, mediocriter altae, foliis pinnatisectis, immaculatis, lobo terminali parvo, triangulari vel trilobato, lobis lateralibus 5 ad 7 utrinque, ± patentibus, triangularibus usque peranguste triangularibus, interlobiis subangustis, petiolo angusto vel subalato, rubro-purpureo, scapis araneosis, phyllariis involucralibus externis 15 ad 19, erectis usque arcuate patentibus, lanceolatis usque ovatis, viridibus, sub apice corniculatis, margine albido, ca. 0.4 mm lato, stigmatibus obscuris, polline irregulari, acheniis angustis cinnamomeis, pyramide 1–1.2 mm longa angusta.

Herbs 9–15(–25) cm tall, base densely whitish arachnoid. Petiole purple, 2–3 cm, ± unwinged; leaf blade mid-green to slightly grayish green, oblanceolate to narrowly oblanceolate, usually 7–14 × 1.5–3 cm, sparsely to densely arachnoid, deeply pinnatisect, midvein arachnoid and adaxially purple; lateral lobes 5–7, narrowly triangular in outer leaves but in middle leaves from broad base abruptly narrowed into a linear distal part, ± patent to slightly recurved, proximal margin ± entire, distal margin sigmoid and with a few linear long teeth near

base; interlobes with purple-brown spots, to 5 mm, sparsely dentate, teeth large; terminal lobe ± triangular to 3-partite, terminal and basal segments narrow, often lingulate, apex acute. Scapes pinkish green, ± equaling leaves, arachnoid. Capitulum 2.5–3 cm wide. Involucre 1–1.1 cm wide, base rounded. Outer phyllaries 15–19, dark green and slightly pruinose, lanceolate to ovate, 8–10 × 3–4.5 mm, erect, ± patent, or arcuate-recurved, with a evident whitish (0.1–)0.2–0.4 mm border, margin sparsely ciliate, apex usually purplish and usually corniculate; inner phyllaries 1.2–1.4 cm, often corniculate near apex. Ligules (paler) yellow; outer ligules subcanaliculate, outside striped dark grayish; inner ligules with yellow to reddish apical teeth. Stigmas grayish green. Anthers without pollen. Achene cinnamon brown, 4.2–4.5 × 0.8–0.9 mm; body narrow, relatively densely shortly spinulose-squamulose above, very gradually narrowing into a cylindric 1–1.2 mm cone; beak 8–9.5 mm. Pappus slightly yellowish white, ca. 5 mm. Fl. late spring. Agamosperm.

● Ruderal sites, dry grasslands; 1500–2000 m. Guizhou, Yunnan.

Taraxacum russum is probably native to China. The relatively robust growth; long, corniculate, and distinctly bordered outer phyllaries; and relatively large achenes point to *T.* sect. *Erythrocarpa*. The species is characterized also by cinnamon brown achenes, absence of pollen, deep grayish green stigmas, spotted interlobes, and arachnoid leaves.

20. Taraxacum sect. **Suavia** Kirschner & Štěpánek, Folia Geobot. 39: 264. 2004.

香花蒲公英组 xiang hua pu gong ying zu

Plant base with remnants of brownish dry petioles. Petiole narrow, unwinged; leaf blade deeply lobed, with lobes most often patent. Scapes densely arachnoid. Involucre base rounded to slightly truncate. Outer phyllaries 9–12, ± imbricate, orbicular-ovate to broadly ovate, mostly 5–6(–7) mm, appressed, with broad paler margin, apex usually corniculate. Achene 4.5–5 mm; body grayish straw-colored or red, densely spinulose above, very gradually narrowing into a conic-subcylindric 0.4–0.9 mm cone, spinules short and thin; beak 3–6 mm, slightly thickened. Pappus white [or whitish yellow], 5–6 mm. Fl. early spring.

About ten species: from Russia (S Altai) to Mongolia, Kyrgyzstan, and N China; one species (endemic) in China.

The occurrence of members of this section is imperfectly explored due to early vernal flowering and scarce material in herbarium collections. For the time being, a single species is known from China. Several distinct taxa, however, are known to occur in the close vicinity of the Chinese border in Kyrgyzstan and may also be found in China (Kirschner & Štěpánek, Preslia 77: 263–276. 2005). *Taraxacum sumneviczii* Schischkin (Sist. Zametki Mater. Gerb. Krylova Tomsk. Gosud. Univ. Kuybysheva 1949(1–2): 8. 1949) was reported to occur in China (FRPS 80(2): 64. 1999) but the species was not present in the material studied by us. In all likelihood, the records are referable to *T. pseudosumneviczii*.

The name *Taraxacum wutaishanense* Kitamura (Acta Phytotax. Geobot. 40: 145. 1989), in all likelihood, belongs to *T.* sect. *Suavia*. However, the original material consists of a single plantlet without achenes, and the interpretation of the name is uncertain. The plant may also belong to *T.* sect. *Stenoloba* or *T.* sect. *Dissecta*.

Members of *Taraxacum* sect. *Suavia* are similar to those of *T.* sect. *Dissecta* but have longer achenes with a very gradual transition into a short conic-subcylindric cone, short beak, and suborbicular outer phyllaries.

111. Taraxacum pseudosumneviczii Kirschner & Štěpánek, **sp. nov.**

假紫果蒲公英 jia zi guo pu gong ying

Type: China. Xinjiang: "Tian Shan [天山], 43°02′16″N, 86°47′16″E, alpine meadows with *Stipa purpurea*" [Hejing Xian 和静县], 3255 m, 4 Oct 2003, *P. Sekerka 03/9*, cultivated as JK 4950 (holotype, PRA; isotype, PRA).

A Taraxaco sumneviczii Schischkin*, specie valde simili, phyllariis involucralibus minoribus, numerosis, late ovatis usque ovato-lanceolatis, calathiis vix opertis, floribus tubulosis, stigmatibus obscurioribus et pyramide espinulosa bene distinguendum.*

Herbs 6–10 cm tall, delicate, base arachnoid and with a tunic. Petiole purplish, 1–2 cm, ± unwinged; leaf blade pale green with a pale greenish midvein, ± narrowly oblanceolate in outline, 4–7 × 0.8–1.2 cm, sparsely to densely arachnoid, deeply pinnatisect; lateral lobes 6–8, ± linear, 4–5 × 1–1.5 mm, ± patent or sometimes slightly curved upward, proximal margin straight to concave and entire, distal margin straight to ± sigmoid and entire or with a single tooth near base; interlobes ± short and narrow, margin entire or very sparsely dentate; terminal lobe ± narrowly triangular, 3-partite, basal segments narrow, 3–4 × ca. 1 mm, and patent, terminal segment narrowly spatulate, 8–10 × 1–2 mm, and apex acute. Scapes green but base pinkish green, ± equaling leaves, ± densely arachnoid. Capitulum 1–1.5 cm wide, remaining unopened. Involucre 6–7 mm wide, base rounded. Outer phyllaries 11–15, dark green, broadly ovate to ovate-lanceolate, outermost ones 3.5–5 × 2–2.5 mm and ca. 1/3 as long as inner ones, loosely appressed, dark middle part with a gradual transition into a paler to whitish 0.2–0.5 mm wide border, margin sometimes sparsely denticulate and glabrous or sparsely ciliate near apex, apex ± flat or dark callose; inner phyllaries 1.2–1.3 cm, apex ± flat. Ligules ± yellow, short; outer ligules ± tubular, outside striped grayish red; inner ligules usually with yellow apical teeth. Stigmas pale grayish green. Anthers without pollen. Achene reddish brown, 4.4–5.1 × 1–1.2 mm; body densely shortly spinulose in upper ca. 1/3, very gradually narrowing into a thick subconic 0.6–1 mm cone, spinules thin and ± erect; beak ca. 4 mm, ± thick. Pappus white, 5–5.5 mm. Fl. spring. Agamosperm.

● Mountain steppe dry grasslands; 3000–3300 m. Xinjiang (Tian Shan).

21. Taraxacum sect. **Dissecta** Soest, Proc. Kon. Ned. Akad. Wetensch., C, 69: 377. 1966.

多裂蒲公英组 duo lie pu gong ying zu

Early vernal small plants, base with a tunic. Petiole unwinged; leaf blade arachnoid, deeply lobed, lateral lobes patent or recurved. Scapes arachnoid. Involucre with rounded base, usually 7–10 mm wide. Phyllaries with apex flat and not corniculate or rarely slightly callose; outer phyllaries 10–16, imbricate or not so, appressed to patent, with a distinct paler border, margin ciliate. Florets yellow; stigma discolored. Outer and inner phyllaries flat, without corniculation at apex, rarely slightly callose. Achene grayish straw-colored brown, brown, or red, densely spinulose above, 3–4.4 × 0.7–0.9 mm; body subabruptly or ± abruptly narrowing into a cylindric to conic-subcylindric 0.5–0.9 mm cone; beak 6–9 mm. Pappus white.

About ten species: widespread from E Kazakhstan, S Siberia, and Mongolia to NW China; one species (endemic) in China.

Taraxacum sect. *Dissecta* is usually referred to under the name *T. dissectum* (Ledebour) Ledebour, which is an agamospermous species of C Siberia and the Baical Lake region of Russia, probably not reaching China. Another species of this section, also reported to occur in China, is *T. compactum* Schischkin (Sist. Zametki Mater. Gerb. Krylova Tomsk. Gosud. Univ. Kuybysheva 1949(1–2): 5. 1949). It is known to occur in the Russian Altai and might be found in NW Xinjiang, but it has not been authoritatively identified in the Chinese material. *Taraxacum collinum* Candolle (Prodr. 7: 149. 1838) is an agamospermous species widespread in the Irkutsk region of Russia, and it might reach NE China (reported to occur in China by Tzvelev, Sosud. Rast. Sovetsk. Dal'nego Vostoka 6: 398. 1992; Krasnikov, Fl. Sibir. 13: 277. 1997). However, no material of this taxon was observed in the herbarium material studied.

112. Taraxacum spadiceum Kirschner & Štěpánek, **sp. nov.**

枣红蒲公英 zao hong pu gong ying

Type: China. Xinjiang: "Tian Shan [天山]: praeruptus alveus fluminis Houxia [后峡] dictus," May 1999, *P. Sekerka, D. Y. Zhan & V. Huml s.n.*, cultivated as JŠ 7381 (holotype, PRA; isotypes, MO, PE, PRA).

Plantae graciles, foliis dissectis, lobis lateralibus patentibus vel subrecurvis, phyllariis involucralibus exterioribus 10 ad 13 saturate viridibus vel atro-viridibus, (3–)5–6 mm longis, 2.2–4 mm latis, peranguste albomarginatis, stigmatibus pallide griseo-viridibus, antheris polline carentibus, acheniis brunneis vel castaneo-brunneis, 3.2–3.8 mm longis, 0.7–0.8 mm latis, in pyramidem 0.6–0.8 mm longam cylindricam subabrupte abeuntibus.

Herbs 8–11 cm tall. Petiole green or purplish brown, narrow, sparsely arachnoid; leaf blade mid-green, linear-oblanceolate, 3.5–8 × 0.7–1.3 cm, sparsely arachnoid, deeply pinnatisect, midrib green to pinkish and ± glabrous; lateral lobes 4 or 5 pairs, narrowly triangular to linear-triangular, ca. 5 × 2 mm, patent to subrecurved, distal margin convex or straight and entire or sparsely dentate; interlobes narrow, margin usually denticulate; terminal lobe narrowly triangular to 3-partite, margin entire. Scapes brownish or purplish green, overtopping leaves, sparsely arachnoid. Capitulum to 2.5 cm wide. Involucre 7–8 mm wide, base rounded. Outer phyllaries 10–13, imbricate, ovate to broadly ovate, outermost ones (3–)5–6 × 2.2–4 mm and 1/3–1/2 as long as inner ones, appressed, margin ciliate, apex ± flat; inner phyllaries 1–1.4 cm, apex blackish callose or flat. Ligules yellow; outer ligules flat, striped purplish gray outside; inner ligules with yellow or gray apical teeth. Stigmas light grayish green. Anthers without pollen. Achene pure brown or castaneous brown, 3.2–3.8 × 0.7–0.8 mm; body subdensely spinulose in upper ca. 1/4, subabruptly narrowing into a ± cylindric 0.6–0.8 mm cone; beak ca. 6 mm. Pappus white, 4–5 mm. Fl. spring. Agamosperm.

● Dry gravelly slopes, dry grasslands; 500–1000 m. Xinjiang (Tian Shan).

Taraxacum dissectum (Ledebour) Ledebour and *T. compactum* Schischkin differ from *T. spadiceum* in fruit color and in having broadly bordered outer phyllaries. The former two species and *T. collinum* Candolle are polliniferous. *Taraxacum pawlodarskum* Doll from Kazakhstan has a very different leaf shape and fruit color, and *T. ustamenum* Doll from Kazakhstan has a different fruit color and outer phyllary shape. The latter species belongs to *T.* sect. *Erythrosperma* and has distinctly corniculate phyllaries.

22. Taraxacum sect. **Erythrosperma** (H. Lindberg) Dahlstedt, Acta Fl. Sueciae 1: 36. 1921.

红种子蒲公英组 hong zhong zi pu gong ying zu

Taraxacum [unranked] *Erythrosperma* H. Lindberg, Acta Soc. Fauna Fl. Fenn. 29(9): 18. 1908.

Plants usually small, base with a tunic. Petiole unwinged; leaf blade pinnatisect; lateral lobes numerous, usually narrow, often dentate or lobulate. Capitulum small, mostly 2–3 cm wide. Outer phyllaries usually 10–18, often imbricate, linear-lanceolate to ovate, short, loosely appressed to arcuate-recurved, indistinctly bordered or pale bordered, apex usually corniculate. Ligules yellow; floret tube glabrous. Achene red, red-brown, brown, grayish pink, or straw-colored brown, 3.2–4.2 mm; body usually densely spinulose above, subabruptly to gradually narrowing into a distinct cylindric 0.7–1.2 mm cone; beak usually 4–9 mm. Pappus ± white.

About 180 species: mainly in Europe and the Mediterranean region; one species (introduced) in China.

Several forms are found in China, but only one has been identified as a known species. The name *Taraxacum erythrospermum* Andrzejowski refers to a sexual member of this section, confined to the E part of C Europe; in the literature (e.g., FRPS 80(2): 65. 1999) it covers most of *T.* sect. *Erythrosperma*.

113. Taraxacum scanicum Dahlstedt, Ark. Bot. 10(11): 21. 1911, s.l.

瑞典蒲公英 rui dian pu gong ying

Herbs 10–20 cm tall. Petiole purplish, ± unwinged; leaf blade deep green, narrowly elliptic, usually 5–10 × 1.5–2.5 cm, sparsely arachnoid to subglabrous, deeply pinnatisect, midvein green or adaxially purplish and sparsely arachnoid; lateral lobes 3–5, triangular to narrowly triangular in outer leaves but in middle leaves narrowly triangular to linear-triangular, ± patent to slightly recurved, proximal margin ± entire, distal margin sigmoid to straight and entire or with several teeth or lobules near base; interlobes often with purplish brown margin, narrow, margin dentate and lobulate; terminal lobe ± triangular in outer leaves but 3-partite in middle ones, terminal segment elongated, narrow, often lingulate, with a few teeth or lobules at base, and apex acute. Scapes pinkish green but later purplish, ± equaling leaves, arachnoid. Capitulum 2.5–3 cm wide. Involucre 7–9 mm wide, base ± rounded. Outer phyllaries 10–15, lanceolate to narrowly so, 6.5–9 × 1–3.5 mm, ± patent to almost reflexed, abaxially deep green, adaxially pale glaucous green, border adaxially ± evident, whitish, and 0.1–0.2 mm wide, margin sparsely ciliate, apex usually corniculate; inner phyllaries 1.2–1.5 cm, often corniculate near apex. Ligules yellow; outer ligules flat, outside striped dark grayish green. Stigmas yellowish green. Anthers polliniferous; pollen grains irregular in size. Achene light brown to slightly reddish brown, 3.4–3.6 × 0.8–0.9 mm; body narrow, subdensely shortly spinulose above, subgradually narrowing into a thin cylindric 0.9–1 mm cone; beak 7–8 mm. Pappus slightly yellowish white, ca. 5 mm. Fl. spring. Agamosperm. 2*n* = 24.

Park grasslands, ruderal grasslands; 400–500 m. Liaoning [native to Europe].

This species is introduced from Europe, where the *Taraxacum scanicum* group consists of several closely related taxa (for review, see Vašut et al., Preslia 77: 197–210. 2005). The Chinese plant is in all respects, particularly in leaf shape, outer phyllaries, floret characters, and size and shape of achenes, almost identical with *T. scanicum* s.s., with the exception of the almost brown achenes (the European *T. scanicum* has achenes more reddish brown).

23. Taraxacum sect. Taraxacum

西洋蒲公英组 xi yang pu gong ying zu

Taraxacum officinale F. H. Wiggers, s.l.

Plants medium-sized or robust. Leaves numerous; petiole unwinged or winged; leaf blade usually broad (3–6 cm), deeply lobed to pinnatisect; lateral lobes variously triangular or deltoid, margin usually dentate or lobulate; interlobes evident, often spotted or bordered tan or brownish purple, margin usually dentate. Capitulum 3–7 cm wide. Involucre usually more than 1.2 cm wide, base rounded or flat. Outer phyllaries (12–)15–25(–28), usually mid-green to deep green and sometimes pruinose, variously arranged, broadly linear, linear-lanceolate, or less often lanceolate, usually 12–16 × 2.5–3.5 mm, usually irregularly patent to reflexed, unbordered or with inconspicuous narrow paler borders, apex usually flat but not infrequently callose or sometimes minutely corniculate. Ligules yellow; floret tube glabrous or sparsely arachnoid with variously curved soft thin hairs. Achene grayish straw-colored brown or light olivaceous brown, usually 3–4.5 mm; body densely spinulose in upper 1/4–1/3, ± abruptly narrowing into a conic to subcylindric 0.2–0.9 mm cone; beak usually 0.9–1.3 cm, thin. Pappus white to dirty white, usually 6–7 mm. Sexual or agamospermous.

Numerous species: mostly known from Europe; three (or perhaps more) species (one endemic, two introduced) in China.

Taraxacum sect. *Taraxacum* in Europe has over 1,000 recognized agamospermous species, but in other continents the knowledge of this section is fragmentary. China has few agamospermous species in this section. One species described from China undoubtedly belongs to *T.* sect. *Taraxacum*, and another couple of agamospermous species were identified as *T. oblongatum* and *T. rhodopodum*. The low quality of herbarium material and lack of specialized collections do not allow any detailed taxonomic analysis. *Taraxacum* sect. *Taraxacum* is represented in China by several species, probably mostly introduced, and their taxonomy requires further study.

The name *Taraxacum officinale* is generally used to cover the diversity of this section. Until recently, the effective lectotypification restricted the usage of this name to what is most often called *T.* sect. *Crocea* M. P. Christiansen, a northern and alpine section. A corrected typification, returning the name to the most common usage (in the sense of *T.* sect. *Ruderalia*) was published recently (Kirschner & Štěpánek, Taxon 60: 219. 2011). From now on, the name *T. officinale* in its broad sense may be used for what is here treated as *T.* sect. *Taraxacum* (*T.* sect. *Ruderalia*), and the older records under *T. officinale* usually belong to this section, which is widespread in China.

The type specimen of *Taraxacum brassicifolium* Kitagawa (Rep. Inst. Sci. Res. Manchoukuo 2: 308. 1938) was not traced. From the description it is obvious that the type plant was an enormously robust "bloated" specimen. The taxon most probably belongs to *T.* sect. *Taraxacum* (the only feature not in full accordance with this assumption is the minute corniculation of outer phyllaries, but taxa in *T.* sect. *Taraxacum* do not infrequently have this trait). The whitish membranous bractlets on the receptacle margin are treated as a monstrosity. Because of the lack of material and insufficient original description, we do not include the taxon in this treatment.

As the following three species represent a minor fragment of totally unexplored morphological variation and taxonomic complexity of the section in China, we refrain from providing the identification key.

114. Taraxacum oblongatum Dahlstedt in Druce, Rep. Bot. Soc. Exch. Club Brit. Isles 9: 27. 1930.

椭圆蒲公英 tuo yuan pu gong ying

Herbs 10–25 cm tall. Petiole pinkish purple, winged; leaf blade deep green with a light green midvein sometimes pinkish near base, ± oblong-oblanceolate, 7–18 × 3–4 cm, sparsely arachnoid to subglabrous, ± pinnatisect; lateral lobes 3–5 pairs,

± triangular, relatively broad, usually hamate-recurved, distal margin convex and usually entire or seldom denticulate; interlobes short but proximal ones longer, margin entire or denticulate, often with a raised dark border; terminal lobe ± helmet-shaped or almost rounded, base often cordate, proximal margin ± straight or sigmoid, distal margin convex and ± entire, apex subobtuse to obtuse and mucronate. Scape light green but later brownish purple, ± arachnoid. Capitulum 3.5–5 cm wide. Involucre base ± rounded. Outer phyllaries 14–18, regularly arranged, linear-lanceolate to lanceolate, (10–)11–13(–14) × 2.3–3.5 mm, arcuate-recurved, abaxially dark green and often suffused purplish brown, adaxially grayish green, ± unbordered. Ligules deep yellow; outer ligules flat, outside striped light grayish brownish purple. Stigmas dark grayish green to almost blackish. Anthers polliniferous; pollen grains variable in size. Achene grayish straw-colored brown, (3.4–)3.8–4.3 mm, ± densely spinulose in upper ca. 1/4, ± abruptly narrowing into a ± conic 0.5–0.6 mm cone; beak 1–1.1 cm. Pappus ± white, ca. 6 mm. Fl. spring. Agamosperm. $2n = 24$.

Lawns, ruderal sites. Yunnan [native to Europe].

115. Taraxacum yinshanicum Z. Xu & H. C. Fu in Ma, Fl. Intramongol. 6: 330. 1982.

阴山蒲公英 yin shan pu gong ying

Herbs to 35 cm tall, robust. Petiole probably pinkish, winged; leaf blade deep green or ± glaucous green, ± broadly oblanceolate, 10–25 × 2.5–4 cm, ± sparsely arachnoid, pinnatilobed to pinnatisect; lateral lobes usually 4 or 5, ± narrowly triangular, from broad base abruptly narrowing into a linear-triangular distal part, ± patent to pointing upward, proximal margin convex and usually denticulate, distal margin usually concave and ± denticulate at base, apex acute, midvein arachnoid and probably pinkish; interlobes broad, margin denticulate; terminal lobe broadly triangular to flat deltoid, basal lobules patent and with an acute apex, terminal segment with an acute apex. Scape brownish green, overtopping leaves, arachnoid. Capitulum ca. 2.5 cm wide. Involucre base ± rounded. Outer phyllaries 15–18, lanceolate to linear-lanceolate, ca. 11 × 1.5 mm, recurved, abaxially dark green, adaxially glaucous green, margin glabrous, apex flat; inner phyllaries ca. 1.5 cm. Ligules yellow; outer ligules flat, outside striped purplish. Stigmas dark green. Anthers polliniferous. Achene grayish straw-colored brown, 3.3–3.5 × ca. 1.2 mm, densely spinulose above, abruptly narrowing into a subconic 0.7–0.8 mm cone; beak 8–9 mm. Pappus ± white, 5–6 mm. Fl. early summer.

● Mountain forest margins. Nei Mongol.

The type specimen undoubtedly belongs to this section. On the other hand, the figure in the protologue (loc. cit.: 289, pl. 113) probably is not conspecific with the type and may belong to another section.

116. Taraxacum rhodopodum Dahlstedt ex M. P. Christiansen & Wiinstedt in Raunkiaer, Dansk Exkurs.-Fl., ed. 5, 310. 1934.

红座蒲公英 hong zuo pu gong ying

Herbs to 25 cm tall, medium-sized. Petiole purplish, winged in most leaves; leaf blade deep green, ± broadly oblanceolate, 11–18 × 3–4 cm, sparsely arachnoid, pinnatisect, midvein purplish and arachnoid; lateral lobes 4–6, ± narrowly triangular to narrowly deltoid, usually patent, sometimes subrecurved, proximal margin ± straight and usually entire or rarely denticulate, distal margin usually ± straight or convex and entire or ± denticulate, apex acute; interlobes short, broad, margin denticulate or entire; terminal lobe triangular to helmet-shaped, margin usually entire or with a single incision, apex subacute. Scape brownish purple, overtopping leaves, arachnoid. Capitulum ca. 5 cm wide. Involucre 1.2–1.5 cm wide, base ± rounded. Outer phyllaries 13–16, lanceolate to broadly lanceolate, 13–14 × 2–3 mm, recurved to reflexed, abaxially dark green, adaxially suffused brownish purple, margin ± glabrous, apex flat; inner phyllaries 1.5–1.8 cm, neighboring pairs often fused and then very broad. Ligules deep yellow; outer ligules flat, outside striped grayish green. Stigmas yellowish green. Anthers polliniferous; pollen grains irregular in size. Achene grayish straw-colored brown, 3.2–3.5 mm; body ± densely spinulose above, ± abruptly narrowing into a ± conic 0.5–0.6 mm cone, spinules thin and acute; beak 9.5–10.5 mm. Pappus ± white, ca. 7 mm. Fl. late spring. $2n = 24$.

Mountain grasslands, along paths; 3600–3700 m. Naturalized in Yunnan [native to (or at least described from) Europe].

72. ASKELLIA W. A. Weber, Phytologia 55: 6. 1984.

假苦菜属 jia ku cai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Crepis sect. *Ixeridopsis* Babcock, Univ. Calif. Publ. Bot. 22: 212. 1947.

Herbs, perennial, usually rather delicate, with a slender taproot and often with shoot-bearing lateral roots. Stems rather low, slender, often branched from base. Leaves in basal rosette or along stem, usually small, with orbicular to obovate and spatulate blade attenuate into a long petiole-like base, glabrous. Synflorescence mostly with rather few capitula. Capitula erect, with 5–15 florets. Involucre narrowly cylindric. Phyllaries in few series, glabrous [or setulose or arachnoid hairy]; outer phyllaries usually less than 1/4, rarely to 1/3, as long as inner ones; inner phyllaries linear-lanceolate, equal. Receptacle naked. Florets yellow or more rarely pale purplish red. Achene usually pale brown, slenderly cylindric to slenderly fusiform, with 10 thin equal ribs, apically truncate, attenuate, or shortly beaked. Pappus white, of scabrid bristles, usually caducous or persistent.

About 11 species: C, NE, and SW Asia, North America; six species (one endemic) in China.

Treatment of *Askellia* (with a basic chromosome number of $x = 7$) as a separate genus instead of as a section of *Crepis* (*C.* sect. *Ixeridopsis*) has been corroborated recently both by Sennikov and I. D. Illarionova (Komarovia 5: 57–115. 2008), based, in particular, on carpological investigations,

and Enke and Gemeinholzer (Taxon 57: 756–758. 2008), based on molecular phylogenetic analyses, yet with uncertain systematic position. More recently, J. W. Zhang et al. (in prep.) revealed in their molecular phylogenetic analyses of subtribe Crepidinae that *Askellia* is part of a well-supported clade including *Ixeridium*, *Ixeris*, and *Taraxacum* and sister to a subclade including *Ixeris* and *Ixeridium*.

1a. Corolla 7–9 mm; anther tube 2–2.5 mm; plants 2–4 cm tall ..... 4. *A. pygmaea*
1b. Corolla 9–14 mm; anther tube 3–5 mm; plants 3–30 cm tall.
2a. Stem branched only apically; lower and middle stem leaves 5–9 cm ..... 5. *A. pseudonaniformis*
2b. Stem branched already from base and appearing as few to many stemmed; lower and middle stem leaves 1.5–4 cm, or if rarely to 8 cm then branches repeatedly divaricately branched.
3a. Plants 4–30 cm tall; branches several to usually many, ascending, repeatedly divaricately and intricately branched; leaves to 8 cm ..... 6. *A. flexuosa*
3b. Plants 4–10(–15) cm tall; branches few to many, procumbent to erect, never repeatedly divaricately and intricately branched; leaves to 4 cm.
4a. Leaf axils inconspicuously white lanate; stem leaves (except uppermost) as large as basal leaves ..... 2. *A. alaica*
4b. Leaf axils glabrous; stem leaves always smaller than basal leaves.
5a. Florets yellow (when fresh); longest outer phyllary 3–4 mm ..... 1. *A. karelinii*
5b. Florets pale purplish red (when fresh); longest outer phyllary 2–2.5 mm ..... 3. *A. lactea*

1. Askellia karelinii (Popov & Schischkin ex Czerepanov) W. A. Weber, Phytologia 55: 6. 1984.

乌恰假苦菜 wu qia jia ku cai

Crepis karelinii Popov & Schischkin ex Czerepanov, Fl. URSS 29: 757. 1964; ?*Askellia ladyginii* Tzvelev; *Youngia karelinii* (Popov & Schischkin ex Czerepanov) Kamelin; *Y. pygmaea* (Ledebour) Ledebour var. *caulescens* Ruprecht; *Y. pygmaea* var. *dentata* Ledebour.

Herbs 4–10 cm tall, perennial, glabrous, glaucescent. Roots and subterranean shoots often branched and slender. Stem delicate, erect, branched from base, leafy. Basal and lower stem leaves petiolate; petiole equaling or shorter to rarely longer than leaf blade; leaf blade elliptic, elliptic-oblanceolate, or spatulate, 0.5–4 × 0.3–1.5 cm, undivided to pinnatipartite, base gradually attenuate into petiole, margin subentire to sinuate-dentate, apex acute to obtuse; lateral lobes (if present) toothlike. Middle stem leaves sessile or subsessile, oblanceolate, otherwise similar to lower stem leaves. Upper stem leaves linear to subulate, smaller. Synflorescence corymbiform, with few capitula. Capitula with 10–12 florets; peduncle filiform, shorter than to ± as long as involucre. Involucre narrowly cylindric, 8–11[–13] × 3–4 mm. Phyllaries green, abaxially glabrous; outer phyllaries ovate to ovate-lanceolate, longest 3–4 mm, apex acute; inner phyllaries 8, margin scarious, apex acute to obtuse. Florets yellow. Corolla 1.1–1.4 cm. Anther tube 3–4 mm. Achene pale yellowish, fusiform, 4.5–7 mm, apically more attenuate. Pappus 5–8 mm. Fl. and fr. Aug.

Gravelly or gravelly-sandy areas particularly on floodplains; 2600–4600 m. Qinghai, Xinjiang, ?Xizang [Kazakhstan, Kyrgyzstan, SC Russia].

Askellia ladyginii was recently described from a few collections from Xizang and distinguished from *A. lactea* by partly pinnately lobed leaves. Unlike *A. lactea* its florets are described as yellow. It has not been possible yet to study the material, but from the description it matches *A. karelinii* and appears hardly worth recognition as a separate species, though *A. karelinii* has otherwise so far not been reported from Xizang.

2. Askellia alaica (Krascheninnikov) W. A. Weber, Phytologia 55: 6. 1984.

红齿假苦菜 hong chi jia ku cai

Crepis alaica Krascheninnikov, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 1: 182. 1933; *Youngia alaica* (Krascheninnikov) Kamelin.

Herbs 5–10(–15) cm tall, perennial, inconspicuously white lanate in leaf axils otherwise glabrous, glaucescent. Roots and subterranean shoots slender. Stem delicate, sparsely branched mostly from base, leafy. Basal and lower stem leaves obovate to oblanceolate, 1.5–3.5 × 0.7–1.5(–2) cm, undivided to shallowly pinnatifid with wide lobes, base petiole-like attenuate, margin irregularly sinuate-dentate with coarse acute teeth, apex obtuse to subacute. Middle and upper stem leaves few, similar to lower stem leaves but usually sessile, only uppermost leaves smaller. Synflorescence corymbiform, with few capitula. Capitula with 9 or 10 florets; peduncle much shorter than involucre. Involucre narrowly cylindric, 10–11 × 2–3 mm. Phyllaries dark green, glabrous, apex ± acute; outer phyllaries ovate to lanceolate, longest 3–4 mm; inner phyllaries 8(–10), margin thin and scarious. Florets orangish yellow or sometimes tinged pink. Corolla 1–1.7 cm. Anther tube ca. 5 mm. Achene yellowish reddish brown, slenderly fusiform, 7–7.5 mm, apically conspicuously attenuate. Pappus 5.5–6.5 mm, persistent. Fl. and fr. Jul–Aug. $2n = 14$.

Alpine gravelly or rocky stream banks, scree slopes; ?2500–4500 m. SW Xinjiang [E Kyrgyzstan, NE Tajikistan].

Askellia alaica, under the name *Crepis alaica*, has been reported generally from the border range between China, E Kyrgyzstan, and NE Tajikistan (Czerepanov, Fl. URSS 29: 653. 1966). So far, no substantiated records from Chinese territory are known (C. H. An, Fl. Xinjiang. 5: 460. 1999), although its presence must be assumed. The description is based on those by Czerepanov (Fl. URSS 29: 653. 1966) and Babcock (Univ. Calif. Publ. Bot. 22: 532. 1947).

3. Askellia lactea (Lipschitz) W. A. Weber, Phytologia 55: 7. 1984.

红花假苦菜 hong hua jia ku cai

Crepis lactea Lipschitz, Repert. Spec. Nov. Regni Veg. 42: 159. 1937; *Askellia minuta* (Kitamura) Sennikov; *C. minuta* Kitamura; *Youngia lactea* (Lipschitz) Kamelin; *Y. pygmaea* (Ledebour) Ledebour var. *purpurea* C. Winkler ex O. Fedtschenko.

Herbs 3–4[–10] cm tall, perennial, glabrous, glaucescent. Roots and subterranean shoots often branched and slender. Stem delicate, erect or sometimes procumbent, branched from base or middle, leafy. Basal and lower stem leaves with a 1–1.5 cm petiole; leaf blade elliptic to narrowly elliptic-ovate, 7–10 × ca. 6 mm, base cuneate, margin entire or sinuate-dentate, apex acute. Upper stem leaves similar to lower stem leaves but narrowly elliptic, smaller, sometimes tinged with purple, margin entire. Synflorescence corymbiform, with few to several capitula. Capitula with 10–12 florets; peduncle filiform, 0.5–2 cm. Involucre narrowly cylindric, 8–10 × 3–4 mm. Phyllaries abaxially glabrous but ciliate at apex; outer phyllaries green, ovate to lanceolate, longest 2–2.5 mm, margin thin and scarious, apex obtuse to acute; inner phyllaries 8, apex acute. Florets pale purplish red. Corolla 1.1–1.4 cm. Anther tube 3–4 mm. Achene yellowish brown, slenderly columnar to fusiform, 4–6 mm, apex only slightly attenuate. Pappus 5–6 mm. Fl. and fr. Jun–Aug.

Gravelly areas on floodplains; 3100–4000 m. Xinjiang, Xizang [Tajikistan].

4. Askellia pygmaea (Ledebour) Sennikov, Komarovia 5: 86. 2008.

矮小假苦菜 ai xiao jia ku cai

Prenanthes pygmaea Ledebour, Mém. Acad. Imp. Sci. St. Pétersbourg Hist. Acad. 5: 553. 1815; *Askellia nana* (Richardson) W. A. Weber; *Barkhausia nana* (Richardson) Candolle; *Crepis humilis* Fischer ex Herder; *C. nana* Richardson; *Hieracioides nana* (Richardson) Kuntze; *P. polymorpha* Ledebour var. *flaccida* Ledebour; *P. polymorpha* subvar. *integrifolia* Ledebour; *P. polymorpha* var. *lyrata* Ledebour; *P. polymorpha* var. *pygmaea* (Ledebour) Ledebour; *Youngia pygmaea* (Ledebour) Ledebour; *Y. pygmaea* var. *flaccida* (Ledebour) Ledebour; *Y. pygmaea* var. *lyrata* (Ledebour) Ledebour; *Y. pygmaea* var. *nana* (Richardson) Ledebour.

Herbs 2–4 cm tall, perennial, glabrous, glaucescent. Roots shoot-bearing; subterranean shoots slender, often branched. Stem delicate, branched from base, leafy. Basal and stem leaves with a 4–14 mm petiole; leaf blade ovate, orbicular, or elliptic, 1–2.6[–3.5] × 0.4–1[–1.7] cm, base cuneate, margin entire, apex rounded to acute. Synflorescence tufted-corymbiform, with few to many capitula. Capitula with 9–11 florets; peduncle filiform, most shorter than involucre. Involucre narrowly cylindric, 9–10 × 2–3 mm. Phyllaries green, abaxially glabrous, margin scarious; outer phyllaries ovate to lanceolate, longest 2–3 mm, apex acute; inner phyllaries 8, apex ± acute. Florets yellow. Corolla 7–9 mm. Anther tube 2–2.5 mm. Achene pale yellowish, columnar to fusiform, ca. 5 mm, apically more strongly attenuate. Pappus 4–5 mm. Fl. and fr. Jun–Sep. 2*n* = 14.

Gravelly areas on floodplains and bases of slopes, stream banks; 4600–4700 m. Xinjiang, Xizang [Kazakhstan, Mongolia, E Russia; North America].

5. Askellia pseudonaniformis (C. Shih) Sennikov, Komarovia 5: 89. 2008.

长苞假苦菜 chang bao jia ku cai

Crepis pseudonaniformis C. Shih, Acta Phytotax. Sin. 33: 190. 1995.

Herbs to 17 cm tall, perennial, glabrous. Stem erect, branched apically, base with residue of old petioles. Lower and middle stem leaves elliptic to oblanceolate, 5–9 × 0.5–1.1 cm including a 3–5.5 cm petiole, base narrowly cuneate, margin sinuate-dentate, apex rounded. Upper stem leaves sessile, linear to lanceolate, base cuneate, margin entire or subentire; uppermost leaves bractlike. Synflorescence corymbiform, with 8–12 capitula. Capitula with ca. 11 florets; peduncle shorter than involucre. Involucre narrowly cylindric, ca. 1.1 cm. Phyllaries abaxially glabrous; outer phyllaries narrowly ovate to lanceolate, longest ca. 2 mm, apex acute; inner phyllaries with a scarious margin, apex obtuse to acute. Florets yellow. Corolla 1–1.4 cm. Anther tube 3–4 mm. Achene brown, fusiform, ca. 6 mm. Pappus ca. 7 mm. Fl. and fr. Aug.

● Mountain slopes; ca. 2500 m. NW Xinjiang (Zhaosu).

This species is only known from the type collection.

6. Askellia flexuosa (Ledebour) W. A. Weber, Phytologia 55: 6. 1984.

弯茎假苦菜 wan jing jia ku cai

Prenanthes polymorpha Ledebour var. *flexuosa* Ledebour, Fl. Altaic. 4: 145. 1833; ?*Askellia melanthera* (C. H. An) Tzvelev; *Barkhausia flexuosa* (Ledebour) Candolle; *B. flexuosa* var. *lyrata* Schrenk; *Crepis flexuosa* (Ledebour) C. B. Clarke; ?*C. melanthera* C. H. An; *Hieracioides flexuosa* (Ledebour) Kuntze; *Youngia flexuosa* (Ledebour) Ledebour; *Y. flexuosa* var. *gigantea* C. Winkler ex O. Fedtschenko; *Y. glauca* Edgeworth.

Herbs 3–30 cm tall, perennial, glaucescent, glabrous. Roots and subterranean shoots often branched and slender. Caudex sometimes branched in older plants, with rosette leaves often well developed. Stem repeatedly divaricately and often intricately branched from base; branches few to numerous, usually rather delicate, ascending. Basal and lower stem leaves extremely variable, oblanceolate, ovate, elliptic, lanceolate, or more rarely linear, 2–8 × 0.2–2 cm, shallowly pinnatifid to pinnatisect or more rarely undivided, base attenuate into a 0.5–1.5 cm petiole-like portion, margin entire to sinuate-dentate, apex acute to rounded; lateral lobes (if present) (1–)3–5-paired, opposite or alternate, elliptic, linear, or toothlike, rarely pinnately divided. Middle and upper stem leaves similar to lower stem leaves but sessile or shortly petiolate and linear-lanceolate to narrowly linear, upward on stem gradually smaller. Synflorescence of each branch corymbiform and sometimes very densely so, with few to several capitula. Capitula with 9–13 florets; peduncle filiform, extremely variable in length and ranging from much longer than involucre to almost absent. Involucre narrowly cylindric, 6–10 × 2–3 mm. Phyllaries green, abaxially glabrous; outer phyllaries ovate to ovate-lanceolate, longest usually ca. 2 mm, apex acute to obtuse; inner phyllaries 8, margin narrow and scarious, apex acute to obtuse. Florets yellow. Corolla 0.9–1.1 cm. Anther tube 3–4 mm. Achene pale yellow, fusiform, 4–6 mm, apex attenuate. Pappus 4–6 mm. Fl. and fr. Jun–Oct. 2*n* = 14*.

Stream banks, lake margins, marshes and floodplains, sandy areas, gravel and loess areas, rather sparsely covered mountain slopes, rocky outcrops, alpine meadows; 800–5100 m. Gansu, Nei Mongol, Ningxia,

Qinghai, Shanxi, Xinjiang, Xizang [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, SC Russia, Tajikistan; SW Asia].

Askellia flexuosa is the most widespread and frequent species of the genus in China, with a considerable ecological amplitude. The species is superficially similar to *Crepidiastrum akagii*, but the latter differs by its blackish achene, with acute antrorse papillae and less attenuate apex, and its somewhat thicker involucre, with outer phyllaries somewhat longer.

Askellia melanthera (= *Crepis melanthera*), only known from the type (not seen) collected in a schoolyard of the city of Ürümqi, Xinjiang, poorly described and diagnosed by blackish anthers and style branches, may perhaps otherwise match *A. flexuosa* and is tentatively included here.

73. IXERIDIUM (A. Gray) Tzvelev, Fl. URSS 29: 388. 1964.

小苦荬属 xiao ku mai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Ixeris [unranked] *Ixeridium* A. Gray, Mem. Amer. Acad. Arts, n.s., 6: 397. 1858.

Herbs, perennial, often rosulate. Stem ascending-erect to erect, branched from base or higher up. Synflorescence usually corymbiform or paniculately corymbiform, with few to many capitula. Capitula with 5–11(–18?) florets. Involucre narrowly cylindric. Phyllaries in few series, margin narrow and scarious; outer phyllaries few, very short (at most ca. 2 mm, usually less), ± unequal; inner phyllaries 5 or (7 or)8, linear-lanceolate, equal. Receptacle naked. Florets some shade of yellow [or rarely white]. Achene pale brown to brown, usually ± subfusiform, subcompressed, with 5 slender main ribs alternating usually with 1 (only exceptionally with 0 or 2) narrower to subequal secondary ribs, space between ribs widely U-shaped, apically often with antrorse acute papillae, apex attenuate into a short slender beak. Pappus yellowish to straw-colored or rarely ?white, of scabrid bristles.

About 15 species: E and SE Asia; eight species (three endemic) in China.

The revised circumscription of *Ixeridium* employed here basically follows the treatment by Pak and Kawano (Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 29–61. 1992), based on carpological and karyological investigations, which has been corroborated recently in molecular phylogenetic analyses of subtribe Crepidinae by J. W. Zhang et al. (in prep.). The placement of the two little-known species with a white pappus is, however, tentative; otherwise, the genus only comprises species with a yellowish or straw-colored pappus. Its basic chromosome number is $x = 7$.

1a. Pappus white.
  2a. Rosette leaves oblanceolate, lyrately lobed; leaf blade attenuate into a petiole much shorter than blade; stems and branches very sparsely white echinulate ..... 7. *I. aculeolatum*
  2b. Rosette leaves triangular or pentagonal, pinnately lobed; leaf blade contracted into a winged petiole longer than blade; stems and branches glabrous and smooth ..... 8. *I. sagittarioides*
1b. Pappus yellowish or straw-colored.
  3a. Inner phyllaries (7 or)8; florets 8–11.
    4a. Basal leaves narrowly spatulate to almost linear, undivided, margin entire ..... 1. *I. gracile*
    4b. Basal leaves narrowly elliptic to linear-elliptic, undivided or more rarely pinnatipartite, margin denticulate, sinuate-dentate, or more rarely entire ..... 2. *I. laevigatum*
  3b. Inner phyllaries 5; florets 5–8.
    5a. Involucre 4.5–6.5 mm.
      6a. Plants 20–80 cm tall; basal leaves crowded, 5–17 cm; pappus 2.5–3 mm ..... 3. *I. beauverdianum*
      6b. Plants only to 15 cm tall; basal leaves in a rosette, 2–4 cm; pappus ca. 4 mm ..... 4. *I. yunnanense*
    5b. Involucre 7–8 mm.
      7a. Herbs 20–50 cm tall; stems slender; basal leaves oblanceolate to elliptic, 1–3 cm wide; stem leaves lanceolate, basally widened, usually clasping ..... 5. *I. dentatum*
      7b. Herbs 10–20 cm tall; stems delicate; basal leaves narrowly elliptic to linear-elliptic, less than 1 cm wide; stem leaves (if any) linear-elliptic, basally attenuate, never clasping ..... 6. *I. transnokoense*

1. Ixeridium gracile (Candolle) Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 45. 1992.

细叶小苦荬 xi ye xiao ku mai

Lactuca gracilis Candolle, Prodr. 7: 140. 1838; *Ixeris gracilis* (Candolle) Stebbins.

Herbs 10–50 cm tall, perennial. Stem erect to ascending erect, weakly to moderately branched from basal third or higher up, glabrous, distantly leafy. Basal leaves narrowly spatulate, narrowly elliptic, or almost linear, 4–15 × 0.4–1 cm, basally attenuate, margin entire, apex acute. Stem leaves narrowly lanceolate to linear-lanceolate, base semiamplexicaul but never clasping. Synflorescence corymbiform to paniculiform-corymbiform, with some to many capitula. Capitula with 8–11 florets; peduncle capillaceous. Involucre narrowly cylindric, 7–8 mm. Phyllaries abaxially glabrous; outer phyllaries 4–6, ovate, less than ca. 1 mm, apex acute; inner phyllaries 7 or 8. Florets yellow. Anther tube and style greenish to blackish upon drying. Achene brown, subfusiform, 4.5–5.5 mm, apex attenuate into a slender 1–1.5 mm beak. Pappus pale yellow, ca. 3 mm. Fl. and fr. May–Jul.

Forests, forest margins; 1400–?2700 m. Xizang, Yunnan [Bhutan, NE India, Nepal].

Starting with J. D. Hooker (Fl. Brit. India 3: 410–411. 1881; see also FRPS 80(1): 257. 1997) and X. Zhuang (Fl. Yunnan. 13: 723. 2004), *Ixeridium gracile* has long been confused with the widespread *I. beauverdianum* (= *I. makinoanum*), see below, which has smaller involucres with only 5 inner phyllaries. Actually, *I. gracile* has a very restricted distribution and is a rather rare species. However, it is quite similar to *I. laevigatum*, and the delimitation between the two species should be reassessed.

2. Ixeridium laevigatum (Blume) Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 45. 1992.

褐冠小苦荬 he guan xiao ku mai

Prenanthes laevigata Blume, Bijdr. 886. 1826; *Crepis laevigata* (Blume) Zollinger; *Ixeridium oldhamii* (Maximowicz) Sennikov; *Ixeris laevigata* (Blume) Engler & Maximowicz; *I. laevigata* var. *oldhamii* (Maximowicz) Kitamura; *I. oldhamii* (Maximowicz) Kitamura; *Lactuca laevigata* (Blume) Candolle; *L. luzonica* S. Vidal; *L. oldhamii* Maximowicz; *L. stenophylla* Makino.

Herbs 10–90 cm tall, perennial, with short oblique ?rhizome and fibrous roots. Stems solitary or few, erect, branched from above middle or less frequently from further below, distantly leafy. Basal leaves crowded, usually present at anthesis, elliptic, narrowly elliptic, or linear-elliptic, 5–32 × 0.3–3.5 cm, undivided or more rarely pinnatipartite, basally attenuate and sometimes with an unwinged petiole-like portion, margin denticulate, sinuate-dentate, or more rarely entire, apex rounded to acute and often mucronate; lateral lobes (if present) 2–5 pairs, semiorbicular, triangular-ovate, or lanceolate. Stem leaves broadly elliptic, oblanceolate, lanceolate, or linear-lanceolate, base attenuate, semiamplexicaul, undivided, margin entire to sinuate-dentate, apex acute. Synflorescence corymbiform, with some to many capitula. Capitula with 8–11 florets; peduncle capillaceous. Involucre cylindric, (5–)6–7(–8) mm. Phyllaries abaxially glabrous; outer phyllaries ovate-lanceolate, longest to 1.5 mm, apex acute; inner phyllaries 8, apex acute. Florets yellow. Anther tube and style greenish to blackish upon drying. Achene brown, subfusiform, 4–5 mm, apex attenuate into a slender 1–2 mm beak. Pappus straw-colored, 3–4 mm. Fl. and fr. Feb–Oct. $2n = 14$*.

Forests, forest margins, densely grassy areas, riverbanks, cliffs, roadsides; near sea level to 2300 m. Fujian, Guangdong, ?Guangxi, Hainan, Taiwan, Zhejiang [Cambodia, Indonesia, S Japan, Laos, New Guinea, Philippines, Vietnam].

3. Ixeridium beauverdianum (H. Léveillé) Springate, Edinburgh J. Bot. 57: 402. 2000.

狭叶小苦荬 xia ye xiao ku mai

Lactuca beauverdiana H. Léveillé, Repert. Spec. Nov. Regni Veg. 8: 450. 1910; *Ixeridium makinoanum* (Kitamura) Pak & Kawano; *Ixeris dentata* (Thunberg) Nakai var. *angustifolia* (Makino) Nakai; *I. makinoana* (Kitamura) Kitamura; *L. makinoana* Kitamura; *L. thunbergii* Maximowicz var. *angustifolia* Makino.

Herbs 20–80 cm, perennial, with fibrous ?and shoot-bearing roots. Stems solitary or few, erect, branched from above middle or less frequently from further below, glabrous, distantly leafy. Basal leaves crowded, usually present at anthesis, narrowly elliptic to linear-elliptic, 5–17 × 0.3–1 cm, undivided, basally attenuate, sometimes with an unwinged petiole-like portion, and semiamplexicaul, margin entire or with a few very slender linear teeth in lower third, apex acute and often mucronate. Stem leaves linear-lanceolate, smaller than basal leaves, base weakly narrowed and semiamplexicaul, otherwise similar to basal leaves. Synflorescence corymbiform to paniculiform-corymbiform, with numerous capitula. Capitula with 5 or 6 florets; peduncle capillaceous. Involucre narrowly cylindric, 4.5–6.5 mm. Phyllaries abaxially glabrous; outer phyllaries 3 or 4, ovate, less than ca. 1 mm, apex acute; inner phyllaries 5. Florets (?pale) yellow, slightly exceeding involucre. Anther tube and style greenish to blackish upon drying. Achene pale brown, subfusiform, 3–3.5 mm, attenuate into a slender 0.5–1 mm beak. Pappus yellowish, 3–4 mm. Fl. and fr. May–Sep. $2n = 14$.

Forests, forest margins, fields, wastelands, meadows; 300–3000 m. Chongqing, Fujian, ?Gansu, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, ?Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan, Japan, Nepal, Thailand, Vietnam].

Ixeridium beauverdianum has long been confused in continental Asia with *I. gracile* (see there), while it was recognized as a separate species (under the names *Ixeris makinoana* and *Ixeridium makinoanum*) in Japan since the 1930s.

4. Ixeridium yunnanense C. Shih, Acta Phytotax. Sin. 31: 539. 1993.

云南小苦荬 yun nan xiao ku mai

Herbs 8–15 cm tall, perennial, rosulate. Stems solitary or few, ascending-erect to erect, branched already from base, glabrous. Rosette leaves elliptic, lanceolate, or oblanceolate, 2–4 × 0.2–0.5 cm, base attenuate into an unwinged petiole-like portion, margin entire or weakly sinuate-dentate, apex acute to rounded and mucronulate. Stem leaves few, concentrated in basal portion, similar to rosette leaves but smaller. Synflorescence laxly corymbose, with few to several capitula. Capitula with 5–8 florets; peduncle capillaceous, 3–10 mm. Involucre narrowly cylindric, 5–6 mm. Phyllaries abaxially glabrous; outer phyllaries ca. 3, ovate, longest ca. 1 mm, apex acute; inner phyllaries 5, apex acute. Florets yellow. Achene yellowish brown, subfusiform, ca. 4 mm, apex attenuate into a slender 0.5–1 mm beak. Pappus straw-colored, ca. 4 mm. Fl. and fr. Jun.

● Grasslands on mountain slopes; 1700–3600 m. Yunnan.

The pappus color in the original description of *Ixeridium yunnanense* is erroneously given as white.

5. Ixeridium dentatum (Thunberg) Tzvelev, Fl. URSS 29: 392. 1964.

小苦荬 xiao ku mai

Prenanthes dentata Thunberg in Murray, Syst. Veg., ed. 14, 715. 1784; *Ixeris dentata* (Thunberg) Nakai; *I. thunbergii* A. Gray; *Lactuca dentata* (Thunberg) C. B. Robinson; *L. thunbergii* (A. Gray) Maximowicz; *Youngia dentata* (Thunberg) Candolle.

Herbs 20–50 cm tall, perennial. Rhizomes shortly oblique,

with fibrous roots. Stems solitary or few, slender, erect, branched from base or higher up, glabrous, sparsely leafy. Basal leaves crowded, usually present at anthesis, narrowly oblanceolate, narrowly elliptic, or elliptic, 4–15 × 1–3 cm, undivided or pinnatipartite, base attenuate into a winged or unwinged petiole-like portion, margin entire or with slender or very fine teeth especially in basal half, apex acute to obtuse and mucronate; lateral lobes (if present) 1–3 pairs, on basal half of leaf, narrowly triangular. Stem leaves ± lanceolate, undivided, base usually expanded and amplexicaul or auriculately clasping, margin entire or with slender or very fine teeth especially in basal half. Synflorescence corymbiform, with some to many capitula. Capitula with 5–7[–11] florets; peduncle capillaceous. Involucre cylindric, 7–8 mm. Phyllaries abaxially glabrous; outer phyllaries broadly ovate, ca. 1.5 × 1 mm; inner phyllaries 5[–8], apex acute. Florets yellow [or rarely white]. Anther tube and style greenish to blackish upon drying. Achene brown, fusiform, 3–3.5 mm, apex attenuate into a slender ca. 1 mm beak. Pappus straw-colored, 4–5 mm. Fl. and fr. Apr–Aug. 2*n* = 14, 21, 28.

Forests on mountain slopes, moist places, fields; 300–1100 m. Anhui, Fujian, ?Guangdong, ?Hebei, ?Heilongjiang, Hubei, Jiangsu, Jiangxi, ?Jilin, ?Liaoning, Shandong, Zhejiang [Japan, Korea, E Russia].

Ixeridium dentatum forms a polyploid complex, and several subspecies have been described to classify the diversity within this complex (Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 42–45. 1992; Yahara in Iwatsuki et al., Fl. Japan 3b: 18–19. 1995, under *Ixeris*). In China only *Ixeridium dentatum* subsp. *dentatum* occurs; its distributional range has not been fully established yet. It has sometimes been confused with *I. laevigatum*, which is, however, clearly distinguished from *I. dentatum* subsp. *dentatum* through the involucres with 8 (instead of 5) inner phyllaries, 8–11 (instead of 5–7) florets per capitulum, and never (instead of usually) clasping stem leaves.

6. Ixeridium transnokoense (Sasaki) Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 49. 1992.

能高小苦荬 neng gao xiao ku mai

Lactuca transnokoensis Sasaki, Trans. Nat. Hist. Soc. Formosa 21: 223. 1931; *Ixeris transnokoensis* (Sasaki) Kitamura.

Herbs 10–20 cm, perennial, with fibrous and spreading shoot-bearing roots. Stems solitary or few, delicate, erect or ascending, often branched already from lower half, ± glabrous, not or very sparsely leafy. Basal leaves crowded, usually present at anthesis, ± narrowly elliptic to linear-elliptic, 2–9 × 0.3–0.8 cm, undivided, base attenuate into an often unwinged petiole-like portion and semiamplexicaul, margin entire or with a few slender or fine teeth or shallowly and remotely sinuate-dentate, apex acute and often mucronate. Stem leaves 1–3, linear-elliptic, smaller than basal leaves, otherwise similar but upward on stem soon reduced to bracts. Synflorescence loosely corymbiform, with few to several capitula. Capitula with 5 or 6 florets; peduncle capillaceous. Involucre narrowly cylindric, 7–8 mm. Phyllaries abaxially glabrous; outer phyllaries 4 or 5, ovate, less than ca. 1 mm, apex acute; inner phyllaries 5. Florets yellow, much exceeding involucre. Anther tube and style greenish to blackish upon drying. Achene pale brown, subfusiform, 4–5 mm, apex attenuate into a slender 1–1.5 mm beak. Pappus yellowish, 4–5 mm. Fl. and fr. Jun–Jul. 2*n* = 14*.

● Alpine grassy slopes; 2600–3300 m. Taiwan.

7. Ixeridium aculeolatum C. Shih, Acta Phytotax. Sin. 31: 544. 1993.

刺株小苦荬 ci zhu xiao ku mai

Herbs to 40 cm tall, perennial, rosulate, with shoot-bearing lateral roots. Stem solitary, grayish green, erect, ± branched from middle, very sparsely white echinulate. Rosette leaves oblanceolate, 3.5–5.5 × 1–1.5 cm, lyrately pinnatifid, abaxially very sparsely white echinulate on midvein, adaxially glabrous, base attenuate into a winged petiole-like portion, margin entire to sinuate; lateral lobes 2 or 3 pairs, ovate to suborbicular; terminal lobe ovate to orbicular, much larger than lateral ones. Stem leaves 2, similar to basal leaves but smaller. Synflorescence laxly paniculiform to corymbiform, with some capitula. Capitula with ca. 10 florets; peduncle wiry, ca. 1.5 cm to several cm, sparsely white echinulate. Involucre cylindric, ca. 8 mm. Outer phyllaries lanceolate, longest ca. 2 mm, apex acute; inner phyllaries abaxially very sparsely echinulate on midvein, apex acute to obtuse. Florets yellow. Achene pale brown, fusiform, ca. 4 mm, apex attenuate into a slender ca. 2 mm beak. Pappus white, ca. 6 mm. Fl. and fr. Sep.

● Mountain slopes; ca. 4000 m. SE Xizang (Mainling).

Only known from the type and of unclear relationship, this taxon is probably not a member of *Ixeridium* in its revised circumscription.

8. Ixeridium sagittarioides (C. B. Clarke) Pak & Kawano, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 48. 1992.

戟叶小苦荬 ji ye xiao ku mai

Lactuca sagittarioides C. B. Clarke, Compos. Ind. 265. 1876; *Ixeris sagittarioides* (C. B. Clarke) Stebbins; *Mycelis sagittarioides* (C. B. Clarke) Sennikov.

Herbs 15–35[–55] cm tall, perennial, rosulate. Stem solitary, erect, branched from basal half or higher up, sparsely hairy. Rosette leaves petiolate; petiole 3–10[–30] cm, narrowly winged, margin entire or sinuate-dentate; leaf blade pentagonal or triangular, 2–8 × 1.5–6 cm, pinnately lobed, margin sinuate-dentate; lateral and terminal lobes triangular with an acute apex. Stem leaves none or few, similar to basal leaves but smaller and less incised or undivided. Synflorescence corymbiform, with some to many capitula. Capitula with 8–16 florets; peduncle wiry. Involucre narrowly cylindric, 7–8 mm. Outer phyllaries ovate to lanceolate, apex acute; inner phyllaries ca. 8[–12], apex acute. Florets yellow. Achene brown [or dark purple, 3–4 mm], narrowly ovoid, apex attenuate into a slender 0.5–1 mm beak. Pappus white, 3–4 mm. Fl. Mar.

Grasslands on mountain slopes; 1900–2000 m. Yunnan [Bhutan, N India, N Myanmar, Nepal, N Thailand].

Insufficiently known and of unclear relationship, this taxon is probably not a member of *Ixeridium* and perhaps not even of subtribe Crepidinae but of subtribe Lactucinae.

74. IXERIS (Cassini) Cassini in F. Cuvier, Dict. Sci. Nat. 25: 62. 1822.

苦荬菜属 ku mai cai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Taraxacum subg. *Ixeris* Cassini, Bull. Sci. Soc. Philom. Paris 1821: 173. 1821; *Chorisis* Candolle; *Chorisma* D. Don (1829), not Lindley ex Sweet (1821).

Herbs, annual or perennial, often rosulate. Stems ± erect, sometimes also long creeping and with erect flowering branches. Synflorescence usually corymbiform. Capitula with (12–)15–25(–40) florets. Involucre cylindric to narrowly campanulate. Phyllaries in several series, glabrous; outer phyllaries several, longest 1/4–1/2 as long as inner ones; inner phyllaries usually 8, linear-lanceolate to lanceolate, equal in length, glabrous, margin usually scarious. Receptacle naked. Florets yellow, rarely whitish or purplish. Achene brown, ± fusiform, not compressed, with 10 (5 main ribs alternating with 5 ± equal secondary ribs) very prominent ± winglike ribs, space between ribs narrowly V- or U-shaped, apex contracted or attenuate into a filiform or slender beak. Pappus white, bristles scabrid.

About eight species: E and S Asia; six species in China.

The revised circumscription of *Ixeris* employed here follows the treatment by Pak and Kawano (Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 15: 29–61. 1992), based on carpological and karyological investigations, which also includes the former monotypic *Chorisis* accommodating *I. repens*. Pak and Kawano's concept of the genus has been corroborated recently in molecular phylogenetic analyses of subtribe Crepidinae by J. W. Zhang et al. (in prep.). Its basic chromosome number is $x = 8$.

1a. Plants with (above or below ground) long creeping stems.
  2a. Leaves palmately 3(–5)-lobed ..... 3. *I. repens*
  2b. Leaves undivided or pinnately lobed.
    3a. Leaf blade spatulate, elliptic, or almost linear, 3–25(–35) cm; involucre (0.8–)1–1.4 cm ..... 2. *I. japonica*
    3b. Leaf blade orbicular, broadly elliptic, ovate, or obovate, ≤ ca. 3 cm; involucre ≤ 1 cm ..... 4. *I. stolonifera*
1b. Plants without creeping stems.
  4a. Stem leaves with sagittately clasping base with basal lobes distinctly directed backward; involucre 5–6 mm ..... 1. *I. polycephala*
  4b. Stem leaves usually with narrowed semiamplexicaul base or exceptionally clasping with almost rectangularly sideward directed basal lobes; involucre 6–11 mm.
    5a. Longest outer phyllary 1–1.5 mm; capitula with 15–25 florets ..... 5. *I. chinensis*
    5b. Longest outer phyllary ca. 3 mm; capitula with 25–40 florets ..... 6. *I. tamagawaensis*

1. Ixeris polycephala Cassini ex Candolle, Prodr. 7: 151. 1838.

苦荬菜 ku mai cai

Crepis bonii Gagnepain; *Ixeris dissecta* (Makino) C. Shih; *I. fontinalis* Candolle; *I. matsumurae* (Makino) Nakai; *I. polycephala* f. *dissecta* (Makino) Ohwi; *I. polycephala* var. *dissecta* (Makino) Nakai; *Lactuca biauriculata* Vaniot & H. Léveillé; *L. matsumurae* Makino; *L. matsumurae* var. *dissecta* Makino; *L. polycephala* (Cassini) Bentham.

Herbs 10–50 cm tall, annual. Stem solitary, erect, branched already in lower half or higher up, glabrous, leafy. Basal leaves present at anthesis, narrowly oblanceolate, lanceolate, linear-lanceolate, or linear, 6–22 × 0.3–1.5 cm, undivided or pinnatipartite to pinnatisect or runcinately so, base attenuate into a well-developed petiole-like portion and ± semiamplexicaul, margin entire or dentate, apex acute; lateral lobes (if present) 2–5 pairs, on leaf blade basal 1/2–2/3. Stem leaves lanceolate to linear-lanceolate, smaller, rather undivided, base strongly sagittately clasping, margin mostly entire, otherwise similar to basal leaves. Synflorescence corymbiform, with few to some capitula. Capitula with 20–25 florets; peduncle capillaceous. Involucre cylindric and 5–6 × 2–3 mm at anthesis, broadly campanulate and 7–8 × 4–5 mm in fruit. Phyllaries abaxially glabrous; outer phyllaries 4–6, ovate, longest less than 1 mm, apex acute; inner phyllaries 8, apex acute to obtuse. Florets yellow or rarely white. Anther tube and style greenish to blackish upon drying. Achene brown to reddish brown, ellipsoid, ca. 4 mm, apex contracted into a slender 1–1.5 mm beak. Pappus ca. 4 mm. Fl. and fr. Feb–Oct. $2n = 16$.

Forest margins, thickets, grasslands, along rivers and streams, by fields, open areas; 100–2000 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, ?Henan, ?Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Afghanistan, Bhutan, Cambodia, N India, Japan, Kashmir, Laos, Myanmar, Nepal, Vietnam].

The leaves of the species, as in other species of the genus, are very variable with respect to their division, ranging from entire to strongly dissected.

The entire plant is used medicinally. The many uses include detoxifying, stopping bleeding, promoting tissue regeneration, removing necrotic tissue, decreasing inflammation of soft tissues, and stopping uterine bleeding, but the main use is for treating furuncles.

2. Ixeris japonica (N. L. Burman) Nakai, Bot. Mag. (Tokyo) 40: 575. 1926.

剪刀股 jian dao gu

Lapsana japonica N. L. Burman, Fl. Indica, 174. 1768; *Barkhausia repens* (Loureiro) Sprengel; *Chondrilla debilis*

(Thunberg) Poiret; *Ixeris debilis* (Thunberg) A. Gray; *I. debilis* f. *sinuata* Franchet & Savatier; *I. japonica* f. *dissecta* Nakai; *I. japonica* f. *integra* (Kuntze) Nakai; *I. japonica* subsp. *litoralis* Kitamura; *I. japonica* var. *litoralis* (Kitamura) H. L. Li; *I. japonica* subsp. *salsuginosa* (Kitagawa) Kitagawa; *I. japonica* var. *salsuginosa* Kitagawa; *Lactuca debilis* (Thunberg) Bentham ex Maximowicz; *L. debilis* var. *integra* Kuntze; *Picris repens* Loureiro; *Prenanthes debilis* Thunberg; *Youngia debilis* (Thunberg) Candolle.

Herbs 15–35 cm tall, perennial, glabrous, rosulate. Taproot with lateral shoot-bearing roots producing secondary leaf rosettes. Stems several, flagelliform, long creeping above ground; nodes 1 to several cm apart, most with adventitious roots and a single leaf. Flowering stems from rosettes and leaf axils of creeping stems, erect, to 35 cm, with 0 or 1 leaf. Basal leaves present at anthesis, spatulate, elliptic, or almost linear, 3–25(–35) × 0.5–2(–3) cm, undivided or pinnatifid to pinnatipartite and sometimes lyrately so, base attenuate into a petiole-like portion, margin entire or sinuate-dentate, apex obtuse to acute and mucronulate; lateral lobes (if present) 1 to few pairs, triangular to elliptic, apex acute to obtuse. Stem leaves (if any) similar to basal leaves but smaller. Synflorescence laxly and weakly corymbiform, with 1–6 capitula. Capitula with 20–25 florets; peduncle wiry, 1–20 cm. Involucre cylindric to campanulate, (8–)10–12 × 4–5 mm at anthesis, to 1.4 cm in fruit. Phyllaries abaxially glabrous; outer phyllaries ovate to lanceolate, longest to 4 mm, apex acute; inner phyllaries 8, apex acute. Florets yellow, anther tube and style greenish to blackish upon drying. Achene brown, fusiform, 6–8 mm, apex attenuate into a filiform 2–3 mm beak. Pappus 6–8 mm. Fl. and fr. Mar–May. $2n$ = 48.

Sandy seashores, open, disturbed places in lowlands, along roads, fields; sea level to 500 m. ?Anhui, Fujian, Guangdong, Guangxi, ?Henan, Liaoning, Taiwan, Zhejiang [Japan, Korea].

In absence of any evidence that the holotype of the name *Lapsana japonica* was to be excluded from this taxon, *japonica* is used as the oldest epithet. The two sheets of the holotype, collected in Japan by C. Kleynhoff and preserved at G-Burman (G 00302006, digital images seen), carry material at early anthesis. Its involucres measure 8.5 mm at anthesis and are thus rather small, but similar small involucres have been seen occasionally also in material from China; otherwise the type material matches well the taxon. The name *Ixeris debilis* (based on *Prenanthes debilis*) has been used instead in works on the flora of Japan since the 1950s, while the basionym *L. japonica* has been omitted entirely.

3. Ixeris repens (Linnaeus) A. Gray, Mem. Amer. Acad. Arts, n.s., 6: 397. 1858.

沙苦荬菜 sha ku mai cai

Prenanthes repens Linnaeus, Sp. Pl. 2: 798. 1753; *Chondrilla repens* (Linnaeus) Lamarck; *Chorisis repens* (Linnaeus) Candolle; *Ixeris brachyrhyncha* Nemoto; *Lactuca brachyrhyncha* Hayata (1919), not *L. brachyrrhyncha* Greenman (1899); *L. repens* (Linnaeus) Bentham ex Maximowicz; *Nabalus repens* (Linnaeus) Ledebour.

Herbs to 10 cm tall, perennial, glabrous. Stems several, flagelliform, creeping to 2 m, ± buried; nodes 2–7 cm apart, each with adventitious roots and mostly a single leaf. Leaves erect; petiole 1.5–9 cm; leaf blade broadly ovate, 1.5–3 × 1.5–5.5 cm, ± fleshy, palmatilobate, palmatipartite, or palmatisect, base attenuate, truncate, or cordate; lobes 3(–5), sessile or with a winged or unwinged petiolule to 1(–1.5) cm, elliptic to ± orbicular, base narrowed, margin mucronulately sinuate-dentate to ± entire, apex rounded to obtuse. Flowering branches from leaf axils, erect, to 10 cm, with 0 or 1 leaf similar to those of main axis but smaller, or reduced. Synflorescence laxly corymbiform, with 2–8 capitula. Capitula with 12–20 florets; peduncle wiry, 0.5–3 cm, with ovate bracts. Involucre cylindric, 10–12 × 4–5 mm at anthesis, to 1.4 cm in fruit. Phyllaries abaxially glabrous; outer phyllaries ovate to lanceolate, longest 4–6 mm, apex acute; inner phyllaries 8, apex acute. Florets yellow. Anther tube and style greenish to blackish upon drying. Achene brown, fusiform to subfusiform, 5–7 mm, apex attenuate into a moderately slender 0.5–2 mm beak. Pappus 5–6 mm. Fl. and fr. Apr–Oct. $2n$ = 16*.

Open sandy beaches; near sea level. Fujian, Guangdong, ?Hainan, Hebei, Jiangsu, Liaoning, Shandong, Taiwan, Zhejiang [Japan, Korea, E Russia, ?Vietnam].

4. Ixeris stolonifera A. Gray, Mem. Amer. Acad. Arts, n.s., 6: 396. 1858.

圆叶苦荬菜 yuan ye ku mai cai

Ixeris capillaris Nakai; *I. stolonifera* subsp. *capillaris* (Nakai) Kitamura; *I. stolonifera* var. *sinuata* (Makino) Takeda; *Lactuca nummulariifolia* H. Léveillé & Vaniot; *L. stolonifera* (A. Gray) Bentham ex Maximowicz; *L. stolonifera* var. *sinuata* Makino.

Herbs 10–15 cm tall, perennial, rosulate, glabrous. Taproot with lateral shoot-bearing roots, producing secondary leaf rosettes. Stems several, flagelliform, long creeping above ground; nodes 1–7 cm apart, most with adventitious roots and a single leaf. Flowering stems from rosettes and leaf axils of creeping stems, erect, to 15 cm, leafless. Leaves present at anthesis; petiole 1–4 cm; leaf blade orbicular, broadly elliptic, ovate, or obovate, 1–3 × 0.8–1.5 cm, undivided or weakly pinnatifid, base rounded, cuneate, or truncate, margin entire, apex obtuse, rounded, or emarginate and often mucronulate; lateral lobes (if present) 1(or 2) pair(s), on basal half of leaf blade, triangular, small. Synflorescence laxly and weakly corymbiform, with 1–6 capitula. Capitula with 15–25 florets; peduncle capillaceous, to 10 cm. Involucre narrowly cylindric, 7–8 × 3–4 mm at anthesis, to 10 mm in fruit. Phyllaries abaxially glabrous; outer phyllaries ovate to lanceolate, longest to 2(–3) mm, apex acute; inner phyllaries 8, apex acute to obtuse. Florets yellow. Anther tube and style greenish to blackish upon drying. Achene brown, fusiform, 4–6 mm, apex attenuate into a filiform 1.5–3 mm beak. Pappus 4–5 mm. Fl. and fr. May–Oct. $2n$ = 16*.

Moist areas on gravelly mountain slopes; 1500–2000 m. ?Anhui, Jiangsu, Jiangxi, Taiwan, Zhejiang [Japan, Korea; introduced to E North America].

5. Ixeris chinensis (Thunberg) Kitagawa, Bot. Mag. (Tokyo) 48: 113. 1934.

中华苦荬菜 zhong hua ku mai cai

Herbs 5–50 cm tall, perennial, rosulate, glabrous. Taproot, often with shoot-bearing lateral roots. Stems usually few to several, rarely solitary, ascending-erect to erect, branched from base or higher up. Rosette leaves oblanceolate, elliptic, narrowly elliptic, or ± linear, 6–24 × 1–2 cm, undivided or pinnatifid to pinnatipartite, basally attenuate, margin entire or sinuate-dentate, apex obtuse, acute, or attenuate; lateral lobes 2–7 pairs, narrowly triangular, linear-triangular, or linear. Stem leaves (0 or)1–4, narrowly lanceolate to linear-lanceolate, mostly undivided or more rarely pinnatifid, base semiamplexicaul and usually not or rarely with a basal pair of sideward directed clasping lobes, margin entire, apex acuminate. Synflorescence laxly corymbiform, with few to many capitula. Capitula with 15–25 florets; peduncle wiry, ca. 1 to several cm. Involucre cylindric, 6–11 mm. Phyllaries abaxially glabrous, apex acute; outer phyllaries ± ovate, longest 1–1.5 mm; inner phyllaries 8. Florets bright yellow, pale yellow, white, or purplish. Anther tube and style greenish to blackish upon drying. Achene brown, subfusiform, 4–6 mm, apex attenuate into a slender 2.5–3 mm beak. Pappus ca. 5 mm. Fl. and fr. Jun–Oct.

Grasslands on mountain slopes, forests, forest margins, along rivers, ravines, open areas, degraded shrublands, thickets, riverbanks, rock crevices, sandy soil areas, fields, field margins, wastelands, roadsides; below 100–4000 m. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [?Cambodia, Japan, Korea, Laos, Mongolia, E Russia, ?Thailand, Vietnam].

Ixeris chinensis includes diploid, triploid, and tetraploid cytotypes. Pak et al. (Acta Phytotax. Geobot. 48: 187–196. 1997) have shown that all three cytotype are present in mainland Asia, while in Taiwan only the diploid cytotype and in Japan only the triploid and tetraploid cytotypes occur. Otherwise, all three cytotypes frequently seem to occur sympatrically. The triploid and tetraploid cytotypes have been identified with *I. chinensis* subsp. *strigosa* (see Kitamura, Mem. Coll. Sci. Kyoto Imp. Univ., Ser. B, Biol. 23: 112–116. 1956), which has long involucres (9–10 mm) and achenes as well as whitish or pale purplish florets. The diploid cytotype has been identified with *I. chinensis* subsp. *chinensis*, which has involucres of 6–8 mm and yellow florets. The third subspecies recognized by Kitamura, *I. chinensis* subsp. *versicolor* (sometimes even treated as two separate species, *I. graminea* and *I. graminifolia*, see, e.g., under *Ixeridium*, in Tzvelev, Fl. URSS 29: 388–392. 1964; Rast. Tsentral. Azii 14b: 62–65. 2008) appears rather to include forms intermediate between the former two at least with respect to involucre length (8–9 mm) and floret color (variably yellow, white, or purplish). It was not included in the analysis by Pak et al. (loc. cit.) and is little understood, even with respect to its actual delimitation from *I. chinensis* subsp. *strigosa*. Until further studies, such as started by Pak et al. (loc. cit.), are available that also include *I. chinensis* subsp. *versicolor*, the taxonomy of *I. chinensis* remains unsatisfactory. For the time being, it appears appropriate basically to maintain the classification of Kitamura (loc. cit. 1956) with three subspecies, the delimitation between them, however, not being clear-cut, and especially between *I. chinensis* subsp. *versicolor* and *I. chinensis* subsp. *strigosa* often questionable in material from China. The distribution ranges given below should therefore be taken with great caution. Leaf shape is very variable in *I. chinensis*; this variation, however, follows patterns not unusual in the genus and the tribe and is taxonomically of no value.

1a. Involucre 6–8 mm; florets bright or pale yellow; stem leaves usually 2–4 ..... 5a. subsp. *chinensis*

1b. Involucre 8–11 mm; florets white, pale yellow, purplish, or rarely bright yellow; stem leaves usually 1 or 2.

2a. Involucre 9–11 mm; florets white to pale purplish; plants 25–50 cm tall ..... 5b. subsp. *strigosa*

2b. Involucre 8–9 mm; florets variable within a population and white, purplish, pale yellow, or rarely also bright yellow; plants usually 10–20 cm tall ..... 5c. subsp. *versicolor*

5a. Ixeris chinensis subsp. **chinensis**

中华苦荬菜(原亚种) zhong hua ku mai cai (yuan ya zhong)

Prenanthes chinensis Thunberg in Murray, Syst. Veg., ed. 14, 714. 1784; *Barkhausia tenella* Bentham; *Chondrilla chinensis* (Thunberg) Poiret; *Ixeridium chinense* (Thunberg) Tzvelev; *Ixeris chinensis* var. *saxatilis* (Kitamura) Kitamura; *I. lacerrima* (Hayata) Kitagawa; *Lactuca chinensis* (Thunberg) Nakai; *L. flavissima* Hayata; *L. lacerrima* Hayata; *L. lacerrima* var. *saxatilis* Kitamura; *L. taitoensis* Hayata; *Paraixeris chinensis* (Thunberg) H. S. Pak; *Youngia chinensis* (Thunberg) Candolle.

Herbs 20–35 cm tall. Stems usually several, ascending-erect to erect. Rosette leaves to 15 cm. Stems leaves usually 2–4. Capitula with 20–25 florets. Involucre 6–8 mm. Florets pale to bright yellow. Achene 4–6 mm. Fl. and fr. May–Oct. 2*n* = 16*.

Grasslands on mountain slopes, open areas, degraded shrublands, thickets, riverbanks, rock crevices, fields, field margins, roadsides; below 100–4000 m. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, ?Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, ?Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [?Cambodia, Korea, Laos, E Russia, ?Thailand, Vietnam].

5b. Ixeris chinensis subsp. **strigosa** (H. Léveillé & Vaniot) Kitamura, Bot. Mag. (Tokyo) 49: 283. 1935.

光滑苦荬 guang hua ku mai

Lactuca strigosa H. Léveillé & Vaniot, Bull. Acad. Int. Géogr. Bot. 20: 144. 1909; *Ixeridium strigosum* (H. Léveillé & Vaniot) Tzvelev; *Ixeris chinensis* var. *strigosa* (H. Léveillé & Vaniot) Ohwi; *I. strigosa* (H. Léveillé & Vaniot) Pak & Kawano; *Paraixeris strigosa* (H. Léveillé & Vaniot) H. S. Pak.

Herbs 25–50 cm tall. Stems solitary or few, erect. Rosette leaves to 24 cm. Stem leaves 1, 2, or rarely more. Capitula with 20–25 florets. Involucre 9–11 mm. Florets white to pale purplish. Achene 5–6 mm. Fl. and fr. Apr–Jul. 2*n* = 24, 32*.

Grasslands on mountain slopes, open areas; 500–1500 m. ?Anhui, Hebei, Heilongjiang, ?Hubei, Jiangsu, Jilin, Liaoning, Nei Mongol, ?Shandong, ?Shanxi [Japan, Korea, ?Mongolia, E Russia].

Delimitation of *Ixeris chinensis* subsp. *strigosa* from *I. chinensis* subsp. *versicolor* needs thorough evaluation, and the present delimitation may perhaps be artificial. The distribution ranges of these two subspecies are therefore questionable.

5c. Ixeris chinensis subsp. **versicolor** (Fischer ex Link) Kitamura, Bot. Mag. (Tokyo) 49: 283. 1935.

多色苦荬 duo se ku mai

Lagoseris versicolor Fischer ex Link, Enum. Hort. Berol. Alt. 2: 289. 1822; *Barkhausia versicolor* (Fischer ex Link) Sprengel; *Chondrilla versicolor* (Fischer ex Link) Schultz Bipontinus; *Crepis graminifolia* Ledebour; *C. vaniotii* H. Léveillé; *Ixeridium biparum* C. Shih; *I. chinense* subsp. *graminifolium* (Ledebour) Tzvelev; *I. chinense* subsp. *versicolor* (Fischer ex Link) Tzvelev; *I. gramineum* (Fischer) Tzvelev; *I. graminifolium* (Ledebour) Tzvelev; *Ixeris chinensis* subsp. *graminifolia* (Ledebour) Kitagawa; *I. chinensis* var. *graminifolia* (Ledebour) H. C. Fu; *I. chinensis* subsp. *hallaisanensis* (H. Léveillé) Kitagawa; *I. chinensis* var. *intermedia* Kitagawa; *I. graminea* (Fischer) Nakai; *I. graminifolia* (Ledebour) Kitagawa; *I. lanceolata* C. C. Chang (1932), not (Houttuyn) Stebbins (1937); *I. scaposa* Freyn; *I. versicolor* (Fischer ex Link) Candolle; *Lactuca fischeriana* Candolle; *L. hallaisanensis* H. Léveillé; *L. rubrolutea* Vaniot; *L. versicolor* (Fischer ex Link) Schultz Bipontinus; *Paraixeris graminea* (Fischer) H. S. Pak; *Prenanthes graminea* Fischer; *P. versicolor* (Fischer ex Link) Bunge.

Herbs usually 10–20 cm tall. Stems several, ascending-erect. Rosette leaves to 17 cm. Stem leaves usually (0 or)1 or 2. Capitula with 15–25 florets. Involucre 8–9 mm. Floret color variable within a population, white, purplish, pale yellow, or rarely also bright yellow. Achene 4–6 mm. Fl. and fr. Mar–Sep.

Grasslands on mountain slopes, forests, forest margins, along rivers, ravines, wastelands, sandy soil areas; 100–4000 m. ?Anhui, ?Fujian, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, ?Jiangxi, Jilin, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan, ?Zhejiang [Korea, Mongolia, E Russia].

See note under the previous subspecies.

6. Ixeris tamagawaensis (Makino) Kitamura, Acta Phytotax. Geobot. 9: 115. 1940.

泽苦荬 ze ku mai

Lactuca tamagawaensis Makino, Bot. Mag. (Tokyo) 17: 90. 1903; *Ixeris chinensis* (Thunberg) Kitagawa subsp. *arenicola* (Makino) Kitamura; *Lactuca versicolor* (Fischer ex Link) Schultz Bipontinus var. *arenicola* Makino.

Herbs 15–30 cm tall, perennial, rosulate, glabrous, with a taproot. Stems solitary or few, ± erect, branched mainly apically, distantly leafy. Rosette leaves linear-lanceolate to linear, 6–15 × 0.2–1 cm, undivided, basally attenuate, margin entire or rarely very weakly sinuate-dentate, apex acute. Stem leaves 1–3, similar to rosette leaves but smaller, base semiamplexicaul. Synflorescence laxly corymbiform, with several to some capitula. Capitula with 25–40 florets. Involucre narrowly cylindric, 7–9 mm. Phyllaries abaxially glabrous; outer phyllaries ovate to lanceolate, longest ca. 3 mm, apex acute; inner phyllaries ca. 8, apex ± acute. Florets yellow. Anther tube and style greenish to blackish upon drying. Achene brown, fusiform, 5–6 mm, apex attenuate into a slender ca. 3 mm beak. Pappus ca. 5 mm. Fl. and fr. May–Aug. 2*n* = 16.

Open gravelly or rocky riverbanks. E Taiwan [Japan, Korea].

75. SONCHELLA Sennikov, Bot. Zhurn. 92: 1753. 2007.

小苦苣菜属 xiao ku ju cai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, perennial, of ± saline habitats. Stem erect, ± leafy. Synflorescence narrowly racemiform or paniculiform. Capitula with ca. 10 florets. Involucre cylindric. Outer phyllaries imbricate, gradually longer centripetally with longest ca. 1/3 of inner ones, glabrous; inner phyllaries linear-lanceolate, equal in length, margin scarious. Receptacle naked. Florets yellow. Achene cylindric to fusiform, subcompressed, with 5 main ribs alternating with (1 or)2 slender secondary ribs, apex truncate. Pappus white, caducous.

Two species: N China, Mongolia, E Russia; two species in China.

Sonchella unites *Youngia stenoma*, the single species of Babcock and Stebbins's (not validly published) *"Y.* sect. *Stenophytum"* (Publ. Carnegie Inst. Washington 484: 42. 1937), and a species formerly treated as *Prenanthes angustifolia* or *Crepis pratensis*. They are strikingly similar to each other except for their different synflorescence shape. *Sonchella* has been confirmed in the molecular phylogenetic analyses of subtribe Crepidinae by J. W. Zhang et al. (in prep.) as being rather distant from *Youngia*.

1a. Synflorescence racemiform, branches 1–3(–5) cm, appressed, upper secondary branches not exceeding main axis and primary branches; midvein of inner phyllaries subapically often conspicuously crested or carinate ..... 1. *S. stenoma*
1b. Synflorescence paniculiform, branches 3–10 cm, arcuate-spreading, upper secondary branches exceeding main axis and primary branches; midvein of inner phyllaries subapically inconspicuously crested or plane ..... 2. *S. dentata*

1. Sonchella stenoma (Turczaninow ex Candolle) Sennikov, Bot. Zhurn. 92: 1753. 2007.

碱小苦苣菜 jian xiao ku ju cai

Crepis stenoma Turczaninow ex Candolle, Prodr. 7: 164. 1838; *Hieracioides stenoma* (Turczaninow ex Candolle) Kuntze; *Ixeris stenoma* (Turczaninow ex Candolle) Kitagawa; *Youngia stenoma* (Turczaninow ex Candolle) Ledebour.

Herbs 10–50 cm tall, perennial, with a taproot ?and shoot-bearing lateral roots. Caudex with residues of old leaf bases. Stem solitary, erect, mostly unbranched below synflorescence, glabrous, leafy. Basal and lower stem leaves narrowly lanceolate, narrowly elliptic, or narrowly oblanceolate, 3–12[–20] × 0.3–1 cm, often somewhat fleshy, glaucescent, glabrous, base attenuate into a petiole-like portion and semiamplexicaul, margin entire or sinuate-dentate, apex ± acute. Middle and upper

stem similar to lower ones but gradually smaller and narrower toward stem apex, margin rather entire. Synflorescence narrowly racemiform, with many capitula. Peduncle wiry, 0.5–2 cm. Involucre brownish green, narrowly cylindric, 8–9 mm. Phyllaries abaxially glabrous; outer phyllaries ovate to lanceolate, longest 2.5–3 mm, apex acute; inner phyllaries ca. 8, midvein subapically often crested, apex acute and ± ciliate. Achene greenish brown, fusiform, 4.5–6.5 mm, apex truncate. Pappus ca. 6 mm. Fl. and fr. Jul–Sep. 2*n* = 16.

Sandy soil in steppes, alkaline areas; 900–1500 m. Gansu, Nei Mongol [Mongolia, E Russia].

All parts of this herb are used medicinally, in particular for treating serious cases of furuncles.

2. Sonchella dentata (Ledebour) Sennikov, Komarovia 5: 106. 2008.

草甸小苦苣菜 cao dian xiao ku ju cai

Sonchus dentatus Ledebour, Icon. Pl. 1: 21. 1829; *Crepis pratensis* C. Shih; *Prenanthes angustifolia* Boulos; *Sonchella dentata* var. *tibetica* (Ostenfeld) Sennikov; *S. pratensis* (C. Shih) Tzvelev; *S. tibetica* (Ostenfeld) Tzvelev; *Sonchus dentatus* var. *tibeticus* Ostenfeld.

Herbs 15–50 cm tall, perennial, with a taproot ?and shoot-bearing lateral roots. Caudex with residues of old leaf bases. Stem solitary, erect, mostly unbranched below synflorescence, ± glabrous, leafy. Basal and lower stem leaves narrowly spatulate, 3–11 × 0.7–1.5 cm, often somewhat fleshy, glabrous, base attenuate into a petiole-like portion and semiamplexicaul, margin entire or sinuate-dentate, apex obtuse to acute. Middle and upper stem leaves few, lanceolate, similar to lower ones but gradually smaller and narrower toward stem apex, margin rather entire. Synflorescence paniculiform, with many capitula. Peduncle wiry, usually shorter than involucre. Involucre dark green, narrowly cylindric, 8–10 mm. Phyllaries abaxially ± glabrous [to setose along midvein]; outer phyllaries ovate to lanceolate, longest 2.5–3 mm, apex acute; inner phyllaries 8, midvein subapically usually plane, apex ± acute. Achene brown, fusiform, ca. 5 mm, apex truncate. Pappus ca. 7 mm. Fl. and fr. Jun–Sep.

Marshes and saline meadows by lakes and streams; 2500–3700 m. Qinghai [Mongolia, E Russia].

76. DUBYAEA Candolle, Prodr. 7: 247. 1838.

厚喙菊属 hou hui ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, perennial, often rosulate, caulescent or rarely acaulescent with 1 or few scapes. Stems leafy or leafless, with ± stiff, yellowish brown, reddish to purplish brown, or blackish mostly glandular hairs, rarely glabrous. Synflorescence of a solitary capitulum or corymbiform, rarely umbelliform with few to several or rarely to 20 capitula. Capitula declined, pendent, or erect, with several (ca. 7) to numerous (ca. 70) florets. Involucre cylindric, broadly campanulate, or almost hemispheric. Phyllaries in several series, often dark green to purplish or blackish when dry, glabrous or with brownish, purplish, or blackish stiff often glandular hairs along midvein; outer phyllaries imbricate, centripetally longer, longest 1/3–4/5 as long as inner ones; inner phyllaries ca. 8 to many, linear-lanceolate to lanceolate, ± equal to somewhat unequal in length. Florets yellow or of some shade of purple (pale, bluish, reddish, or brownish), or blue. Receptacle naked. Achene ± fusiform, weakly ± compressed, with 5 usually prominent main ribs alternating with 1 or 2 more slender secondary ribs, apex truncate or attenuate. Pappus yellowish, brownish, brown, or rarely ?whitish, bristles scabrid.

About 15 species: Bhutan, SW China, N India, N Myanmar, Nepal; 12 species (eight endemic) in China.

Dubyaea forrestii Mamgain & R. R. Rao (Edinburgh J. Bot. 65: 1. 2008) was described from rocky alpine slopes in Gaoligong Shan in NE Myanmar, close to the border with China or possibly inside Yunnan ("[F]lank of the N'Maikha–Salwin [Nu Jiang] divide, lat. 26°30′N, alt. 11,000′ [3700 m]"). It was described as being similar to *D. atropurpurea* and is known only from the type, *G. Forrest 29660* (holotype, BM; isotype, E), collected in 1931.

1a. Florets yellow.
  2a. Stems, branches, and phyllaries glabrous; leaves undivided and entire or very scarcely and shallowly dentate, mostly rosulate and stem with bracts only ..... 5. *D. tsarongensis*
  2b. Stems, branches, and phyllaries with stiff yellowish brown, reddish, purplish brown, or blackish mostly glandular hairs; leaves dentate to pinnately lobed, sometimes basally crowded but usually cauline.
    3a. Stem with yellowish brown stiff hairs ..... 4. *D. emeiensis*
    3b. Stem with brown, reddish brown, purplish, or blackish stiff long glandular or non-glandular hairs.
      4a. Capitula with 40–50 florets; involucre broadly campanulate ..... 1. *D. hispida*
      4b. Capitula with less than 15 florets; involucre cylindric or narrowly cylindric.
        5a. Involucre ca. 1.5 cm; capitula with ca. 7 florets; achene ca. 7 mm ..... 2. *D. jinyangensis*
        5b. Involucre 1–1.1 cm; capitula with 9–13 florets; achene 4.5–5.5 mm ..... 3. *D. blinii*
1b. Florets of some shade of purple (pale, bluish, reddish, or brownish) or blue.
  6a. Plants rosulate, acaulescent; capitula on 1–7 scapes, less than 10 cm.
    7a. Rosettes with 3–7 scapes; plants with long stiff glandular hairs especially on scapes ..... 10. *D. amoena*
    7b. Rosettes with a solitary scape; plants glabrous ..... 11. *D. gombalana*

6b. Plants rosulate or not, caulescent with branched leafy or more rarely leafless but branched stem (15–)30–100 cm tall.
8a. Capitula erect; pappus ?whitish ..... 7. *D. cymiformis*
8b. Capitula nodding; pappus yellowish to brown.
9a. Lower and middle stem leaves at most tapering toward base but not contracted into a petiole-like rachis; stems, branches, and phyllaries glabrous ..... 9. *D. glaucescens*
9b. At least lower and middle stem leaves contracted into a petiole-like unwinged or winged rachis; long stiff blackish hairs present at least in apical portion of stem.
10a. Phyllaries glabrous except for a ciliate margin ..... 12. *D. stebbinsii*
10b. Phyllaries on abaxial midvein with long stiff brown to blackish glandular hairs.
11a. Involucre broadly campanulate, 1.8–2.2 × 2–2.5 cm ..... 6. *D. atropurpurea*
11b. Involucre campanulate, 1.5–1.7 × 1–1.5 cm ..... 8. *D. rubra*

1. Dubyaea hispida Candolle, Prodr. 7: 247. 1838.

厚喙菊 hou hui ju

Hieracium hispidum D. Don, Prodr. Fl. Nepal. 165. 1825, not Forsskål (1775); *Crepis bhotanica* Hutchinson; *C. dubyaea* (C. B. Clarke) C. Marquand & Airy Shaw; *Dubyaea bhotanica* (Hutchinson) C. Shih; *D. lanceolata* C. Shih; *D. pteropoda* C. Shih; *Lactuca dubyaea* C. B. Clarke.

Herbs 20–60 cm tall, perennial, with creeping ?rhizomes. Stem erect, branched from below middle or higher up, leafy, with long blackish stiff glandular hairs and pale curly weak hairs. Basal and lower stem leaves sessile or base attenuate into a long petiole-like portion, oblanceolate, elliptic, or narrowly elliptic, 5–18 × 1.5–6 cm, sinuate-dentate to shallowly lyrately pinnatifid, both faces with hairs or mainly abaxially, base narrow to widened and ± clasping, margin mucronulately dentate, apex acute to acuminate. Middle and upper stem leaves similar to lower stem leaves but ± lanceolate, smaller, base auriculately clasping; uppermost stem leaves linear-lanceolate, reduced in size. Synflorescence corymbiform, with 2–7 capitula. Capitula nodding, with 40–50 florets; peduncle blackish pilose. Involucre campanulate, 1.8–2 × 1–1.5 cm. Phyllaries with long dark brown to blackish stiff glandular hairs on midvein except on innermost ones; outer phyllaries rather few, narrowly lanceolate to linear, closely approaching inner ones in length, apex acute to acuminate; inner phyllaries many, lanceolate, margin apically often ± brownish ciliate to fringed. Florets yellow. Achene brown, 7–9 mm, with several ribs, apex long attenuate and paler. Pappus yellowish, 0.8–1.2 cm. Fl. and fr. Jul–Nov. 2*n* = 16.

Forests, forest margins, meadows, thickets; 2700–4500 m. Sichuan, Xizang, Yunnan [Bhutan, India (Sikkim), N Myanmar, Nepal].

Dubyaea hispida is here considered in the wider sense established by Stebbins (Mem. Torrey Bot. Club 19(3): 19. 1940) and taken up by X. Zhuang (Fl. Yunnan. 13: 704. 2004), who consequently included also the segregates *D. lanceolata* and *D. pteropoda*, distinguished only by minor differences in leaf shape. The underground parts are usually described as creeping rhizomes from which the stems arise; no specimen, however, has been seen where a true rhizome is preserved. The underground parts preserved in the material seen could also be interpreted as root-borne shoots.

2. Dubyaea jinyangensis C. Shih, Acta Phytotax. Sin. 31: 441. 1993.

金阳厚喙菊 jin yang hou hui ju

Herbs to 15 cm tall, perennial, with taproot. Stem solitary, erect, apically branched and with lanceolate bracts, with long stiff blackish hairs. Leaves sessile, narrowly elliptic, isomorphic, 7–8 × ca. 2 cm, abaxially with long reddish brown to brown hairs on veins, base auriculate and semiamplexicaul, margin coarsely dentate to ± lobed, apex acuminate. Synflorescence corymbiform, with ca. 9 capitula. Capitula erect, with ca. 7 florets. Involucre narrowly cylindric, ca. 1.5 × 0.5 cm. Phyllaries dark green, abaxially with long stiff blackish hairs on midvein; outer phyllaries rather few, ovate to lanceolate, 2–5 × ca. 1 mm, apex acute to obtuse; inner phyllaries lanceolate, apex acute to obtuse. Florets yellow. Achene brown, ca. 7 mm, with 8 unequal ribs, apex truncate. Pappus brownish, ca. 7 mm. Fl. and fr. Sep.

● Mountain slopes; ca. 3400 m. S Sichuan (Jinyang).

3. Dubyaea blinii (H. Léveillé) N. Kilian, **comb. nov.**

刚毛厚喙菊 gang mao hou hui ju

Basionym: *Crepis blinii* H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 345. 1914; *C. setigera* J. Scott; *Faberia blinii* (H. Léveillé) H. Léveillé; *Youngia blinii* (H. Léveillé) Lauener; *Y. setigera* (J. Scott) Babcock & Stebbins.

Herbs 15–35 cm tall, perennial, ± rosulate. Caudex strong, with residues of old leaf bases, brown lanate in leaf axils. Stem erect or curved-erect, usually branched apically, densely setose with brownish to purplish spreading hairs, moderately leafy. Rosette leaves (present or not at anthesis) and lower stem leaves oblanceolate to elliptic, 7–18 × 1.5–4 cm, undivided and coarsely sinuate-dentate or runcinate-dentate to pinnatifid, abaxially densely and adaxially sparsely setose with brownish to purplish spreading hairs, base attenuate into a cuneately winged petiole-like portion and semiamplexicaul, margin sinuate-dentate, apex acute to acuminate; lateral lobes triangular, ± retrorse, apex acute. Middle and upper stem leaves similar to lower leaves but smaller, base without a petiole-like portion but semiamplexicaul. Synflorescence densely corymbiform, with 10–20 capitula. Capitula erect, with 9–13 florets; peduncle 2–8 mm, densely setose with brownish to purplish spreading hairs. Involucre cylindric, 1–1.1 cm. Phyllaries abaxially brownish to purplish setose along midvein; outer phyllaries triangular to lanceolate, longest 2.5–3 mm, apex acute; inner phyllaries ca. 8, with thin scarious margin, apex acute. Florets yellow. Achene pale brown, 4.5–5.5 mm, with ca. 12 unequal ribs, glabrous, apex truncate. Pappus pale brown, 5–7 mm. Fl and fr. Jul–Oct.

● Mountain pastures, open grassy slopes; ca. 2600 m. W Sichuan, SW Yunnan.

Dubyaea blinii has been considered as a species of *Youngia* since its inclusion by Babcock and Stebbins (Univ. Calif. Publ. Bot. 18: 227–229. 1943, as *Y. setigera*) in that genus. Examination of the type material, however, revealed that it is grossly misplaced in *Youngia*, from which it differs by the indumentum of leaves, stems, and phyllaries, and its achene and pappus features, but conveniently fits into *Dubyaea*, where it may perhaps be more closely related to *D. jinyangensis*.

4. Dubyaea emeiensis C. Shih, Acta Phytotax. Sin. 33: 191. 1995.

峨眉厚喙菊 e mei hou hui ju

Herbs to 13 cm tall, perennial. Stem erect, apically branched, purplish red and glabrous below middle, pale green and densely hispid with stiff yellowish brown hairs above middle, leafy. Lower and middle stem leaves oblanceolate to elliptic, 5–9 × 2–3 cm, thick, glabrous, abaxially dark purple, base cuneate-attenuate and tapering into a narrow or petiole-like portion, margin dentate, apex acute to acuminate. Upper stem leaves subopposite, sessile, lanceolate, 5–6 × 2–3 cm, base rounded to cuneate, otherwise like middle stem leaves; uppermost leaves reduced in size to broadly linear acuminate bracts. Synflorescence umbelliform, with ca. 7 capitula each with a peduncle of equal length. Capitula with 20–25 florets; peduncle ± thickened, with stiff brown hispid hairs. Involucre narrowly campanulate, 1.3–1.5 × ca. 0.8 cm. Phyllaries abaxially blackish green and with stiff brown hairs on midvein; outer phyllaries triangular to lanceolate, longest ca. 4.5 × 1.2 mm, apex acute; inner phyllaries with apex obtuse to rounded. Florets yellow. Achene brown, ca. 5 mm, with ca. 14 unequal ribs. Pappus yellowish, ca. 7 mm. Fl. and fr. Jul.

● Forests; ca. 2500 m. Sichuan (Emei Shan).

Dubyaea emeiensis is a poorly known species only known from the type collection from Emei Shan.

5. Dubyaea tsarongensis (W. W. Smith) Stebbins, J. Bot. 75: 17. 1937.

察隅厚喙菊 cha yu hou hui ju

Lactuca tsarongensis W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 12: 211. 1920; *Crepis tsarongensis* (W. W. Smith) J. Anthony.

Herbs 6–30 cm tall, perennial, usually rosulate, with a taproot and a short ± subterranean caudex. Stem slender, usually unbranched or rarely 1-branched, glabrous, leafless and with only a few linear bracts or more rarely with a few leaves in basal portion. Rosette leaves oblanceolate to elliptic, 3–11 × 0.5–1.5 cm, glabrous, base usually ± attenuate into a petiole-like portion, margin entire or sparsely mucronulate-dentate, apex rounded and mucronulate. Stem leaves (if present) 1–3, oblanceolate to lanceolate, smaller than rosette leaves, base attenuate to ± auriculately clasping, otherwise similar to rosette leaves. Capitulum solitary or more rarely a pair, pendent, with 15–25 florets. Involucre narrowly campanulate, 1.2–1.6 cm. Phyllaries abaxially ± uniformly dark green, glabrous, apex acute; outer phyllaries ovate to broadly lanceolate, approaching inner ones in length; inner phyllaries ca. 8. Florets yellow. Achene not seen when mature, ca. 5 mm, apex truncate. Pappus yellowish, 6–8 mm. Fl. and fr. Aug–Oct.

Scree slopes, alpine meadows; 2500–4100 m. Yunnan [N Myanmar].

Dubyaea chimiliensis (W. W. Smith) Stebbins, formerly considered as conspecific with *D. tsarongensis* and distinguished only at infraspecific rank, is actually a markedly distinct species with a localized distribution in N Myanmar, as was first recognized by Stebbins (Mem. Torrey Bot. Club 19(3): 22–24. 1940). *Dubyaea tsarongensis* appears actually more closely related to *D. gombalana*.

6. Dubyaea atropurpurea Stebbins, J. Bot. 75: 51. 1937.

紫花厚喙菊 zi hua hou hui ju

Lactuca atropurpurea Franchet, J. Bot. (Morot) 9: 294. Aug 1895, not Franchet (Jul 1895); *Dubyaea panduriformis* C. Shih.

Herbs 30–80(–120) cm tall, perennial, with a stout taproot. Stem stout, erect, branched from middle or higher up, with long stiff dark brown to blackish glandular hairs, leafy. Basal and lower stem leaves hairy or sometimes glabrescent, base narrowed and sometimes ± expanded and clasping, margin mucronulately sinuate-dentate; terminal lobe triangular-ovate, to 20 × 20 cm, basally cordate to sagittate then contracted into a at least distally winged petiole-like rachis to 50 cm with 0–3 pairs of small somewhat distant broadly triangular lateral lobes in apical portion, apex obtuse, acute, or rounded. Middle and upper stem leaves similar to lower stem leaves but (much) smaller; leaf blade lanceolate, oblanceolate, or elliptic, less or not divided and sinuate-dentate, proximally much less narrowed and base distinctly clasping; uppermost stem leaves ± elliptic, with a narrow base. Synflorescence corymbiform, with 3–8 capitula. Capitula nodding, with 60–70 florets; peduncle usually long, blackish pilose. Involucre broadly campanulate, 1.8–2.2 × 2–2.5 cm. Phyllaries dark green to blackish, with stiff long blackish glandular hairs along midvein except for innermost ones; outer phyllaries few, narrowly lanceolate, approaching inner in length; inner phyllaries many, broadly lanceolate, 4–6 mm wide, margin apically brownish ciliate to fringed, apex acute to acuminate. Florets dark purplish. Achene brown, 6–8 mm, with several strong ribs. Pappus dirty yellowish to pale brownish, 7–10 mm. Fl. and fr. Jul–Oct.

Picea forest margins, alpine meadows, thickets; 3000–4100 m. Sichuan, Yunnan [NE Myanmar].

The basionym *Lactuca atropurpurea* is illegitimate as a later homonym; thus, according to Art. 58.1 of the *Vienna Code*, the combination *Dubyaea atropurpurea* is treated as a replacement name.

Following X. Zhuang (Fl. Yunnan. 13: 705. 2004), *Dubyaea panduriformis*, distinguished from *D. atropurpurea* by minor leaf features only, is considered as conspecific.

7. Dubyaea cymiformis C. Shih, Acta Phytotax. Sin. 31: 439. 1993.

伞房厚喙菊 san fang hou hui ju

Herbs to 45 cm tall, perennial. Stem erect, basally and middle tinged with purplish red, branched from basal portion, leafy; branches ascending, densely covered with dark brown to blackish long stiff glandular hairs. Basal and lower stem leaves oblanceolate to elliptic, ca. 18 × 4 cm, lyrately pinnatipartite,

basally attenuate, margin mucronulately dentate; lateral lobes 4 or 5 pairs, elliptic to obliquely ovate; terminal lobe broadly elliptic to oblanceolate. Middle stem leaves similar to lower stem leaves but base ± auriculately clasping; uppermost stem leaves linear to lanceolate, undivided or almost so, apex acute to rounded. Synflorescence corymbiform, with ca. 15 capitula. Capitula erect, with numerous florets. Involucre broadly campanulate, ca. 1 × 2 cm. Phyllaries dark green, apex acute to acuminate; outer phyllaries rather few, narrowly lanceolate, with long brown stiff glandular hairs and weak curly pale uniseriate hairs on midvein and along margin; inner phyllaries except innermost ones with long, brown stiff glandular hairs along midvein. Florets purplish. Achene not seen when mature. Pappus ?whitish, ca. 1 cm. Fl. Jul.

● Mountain slopes; ca. 3200 m. S Xizang (Yadong).

Known only from the type, this species is probably related to *Dubyaea oligocephala* (Schultz Bipontinus) Stebbins from the W Himalaya and *D. hispida*.

8. Dubyaea rubra Stebbins, Mem. Torrey Bot. Club 19(3): 17. 1940.

长柄厚喙菊 chang bing hou hui ju

Dubyaea muliensis C. Shih.

Herbs 30–60 cm tall, perennial. Stem erect, branched apically or rarely from basal portion, basally and middle usually purplish red, with long blackish stiff glandular hairs and pale curly weak hairs, leafy. Basal and lower stem leaves hairy particularly abaxially, margin mucronulately sinuate-dentate; terminal lobe triangular to triangular-ovate, 3.5–8 × 2.5–6 cm, basally cordate, truncate, or shortly cuneate and contracted into an unwinged or at least apically winged petiole-like rachis of 4–10 cm with 0–3 pairs of small sometimes indistinct triangular to ovate lateral lobes in upper portion, apex acute. Middle and upper stem leaves similar to lower stem leaves but without or with a short winged petiole-like rachis, lanceolate to ovate-lanceolate, small, base narrow to somewhat auriculately clasping. Synflorescence sparsely and ± distantly corymbiform, with 3–6 capitula. Capitula nodding, with 50–60 florets; peduncle usually long blackish pilose. Involucre campanulate, 1.5–1.7 × 1–1.5 cm. Phyllaries dark green to blackish, with long blackish stiff glandular hairs along midvein except in innermost ones and all ± with weak curly pale multicellular uniseriate hairs especially along margin and apically, apex acute; outer phyllaries rather few, linear-lanceolate, approaching inner ones in length; inner phyllaries many. Florets pale purple. Achene brown, ca. 8 mm, with several ribs, apex long attenuate and paler than remainder. Pappus yellowish, ca. 8 mm. Fl. and fr. Aug–Sep.

● Forest margins; 3200–4500 m. SW Sichuan (Daocheng, Muli).

Dubyaea rubra, which is apparently related to *D. hispida*, has a localized distribution in SW Sichuan. *Dubyaea muliensis*, distinguished by minor features of the leaf shape, is considered as conspecific.

9. Dubyaea glaucescens Stebbins, Mem. Torrey Bot. Club 19(3): 16. 1940.

光滑厚喙菊 guang hua hou hui ju

Dubyaea grandis Handel-Mazzetti.

Herbs 40–60 cm tall, perennial, with a taproot. Stem erect, glabrous, apically sparsely branched, leafy. Leaves glabrous. Basal and lower stem leaves oblanceolate to obovate, 20–24 × 6–8 cm, sinuate-dentate to pinnatipartite with triangular lobes, glabrous, basally attenuate to an auriculately clasping base, margin sparsely mucronulate-dentate, apex acute to acuminate. Middle stem leaves similar to lower stem leaves but smaller and rather more sinuate-dentate than shallowly pinnatifid, less attenuate toward base and broadly auriculately clasping. Synflorescence very laxly corymbiform, with 2–4 capitula. Capitula nodding, with numerous florets; peduncle 7–22 cm, stout. Involucre broadly campanulate, 1.8–2 × 1.5–2 cm. Phyllaries abaxially dark green and glabrous, apex acute; outer phyllaries ovate to triangular-ovate, largest 4–6 × 2–3 mm; inner phyllaries with margin and apex shortly brownish fimbriate. Florets blue to purple. Achene brownish, ca. 3.5 mm, apex truncate. Pappus yellowish to pale brownish, 9–10 mm. Fl. Jun–Jul.

● Forest margins; 900–1300 m. Sichuan.

10. Dubyaea amoena (Handel-Mazzetti) Stebbins, J. Bot. 75: 17. 1937.

棕毛厚喙菊 zong mao hou hui ju

Lactuca amoena Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 61: 23. 1924.

Herbs to 7 cm tall, perennial, rosulate, acaulescent, with a taproot. Caudex short, ± subterranean, with 3–7 scapes. Rosette leaves oblanceolate to narrowly elliptic, 4–10(–12) × 1–3 cm, sinuate-dentate or lyrately pinnatifid to subpinnatisect; lateral lobes elliptic to triangular, gradually smaller toward leaf base, abaxially with dark brown multicellular uniseriate hairs on veins, adaxially glabrous, margin entire or very scarcely and shallowly mucronulate-dentate; terminal lobe ovate to triangular, apex rounded, acute, or shortly acuminate. Scapes sometimes with 1 or 2 linear bracts, with dense long dark brown stiff glandular hairs. Capitula erect, with 10–16 florets. Involucre narrowly campanulate, 1.5–1.8 × 0.7–1 cm. Phyllaries abaxially brownish purple and with deep brown long stiff glandular hairs on midvein; outer phyllaries narrowly triangular to linear-lanceolate, approaching inner ones closely in length, apex acute to obtuse; inner phyllaries 8–10. Florets blue to bluish purple. Achene brown to dark brown, 4.5–6.5 mm, with 5 main ribs, apex truncate. Pappus brown, 1–1.2 cm. Fl. and fr. Jul–Sep.

● Alpine meadows; 3500–4400 m. Yunnan.

11. Dubyaea gombalana (Handel-Mazzetti) Stebbins, J. Bot. 75: 17. 1937.

矮小厚喙菊 ai xiao hou hui ju

Lactuca gombalana Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 61: 23. 1924.

Herbs to 10 cm tall, perennial, rosulate, acaulescent, with a taproot. Caudex short, sometimes branched, ± subterranean, glabrous, with 1 scape and sometimes with 1 lanceolate bract. Rosette leaves narrowly elliptic to oblanceolate, 3–9 × 0.5–0.7 cm, glabrous, base attenuate into a petiole-like portion, margin

entire, apex acute to shortly acuminate. Capitula erect (to declined?), with 12–16 florets. Involucre narrowly campanulate, 1.5–1.8(–2.4) cm at anthesis but unknown in fruit. Phyllaries abaxially brownish purple, glabrous; outer phyllaries triangular-ovate to lanceolate, approaching inner ones closely in length; inner phyllaries ca. 8. Florets blue to bluish purple. Achene not seen when mature. Pappus brownish, 1.3–1.5 cm. Fl. Jul–Aug.

● Ravines on mountain slopes, forests, alpine meadows; 3200–3900 m. Xizang, Yunnan.

12. Dubyaea stebbinsii Ludlow, Bull. Brit. Mus. (Nat. Hist.), Bot. 2: 74. 1956.

朗县厚喙菊 lang xian hou hui ju

Herbs, perennial. Caudex subglobose. Stem to 1 m tall, glabrous or apically sparsely hairy. Basal leaves unknown. Lower and middle stem leaves with margin coarsely mucronulately sinuate-dentate; terminal lobe to 15 × 12 cm, basally cordate to shortly cuneate then contracted into an unwinged petiole-like rachis to 7 cm with apically 1 or 2 pairs of elliptic to obovate lateral lobes 1–3 × 0.5–2 cm, apex acute. Upper stem leaves similar to middle stem leaves but gradually smaller and without lateral lobes. Synflorescence corymbiform, with 1–4 capitula. Capitula nodding, with numerous florets; peduncle 12–22 cm, apically pubescent. Involucre campanulate, 1.3–1.5 × 1–1.5 cm. Phyllaries blackish green, with a ciliate margin especially apically otherwise glabrous; outer phyllaries ovate to lanceolate, largest 8–10 × 3–4 mm; inner phyllaries many, 3–5 mm wide, apex acute to obtuse. Florets reddish mauve to bluish purple. Achene not seen when mature, glabrous, with ca. 8 ribs, apex truncate. Pappus brownish, 8–10 mm.

Grassy slopes, [woodlands]; [3500–]3700–3800 m. SE Xizang (Nangxian) [Bhutan].

77. SYNCALATHIUM Lipschitz in Sočava, Akad. Sukačevu 75-letiju So Dnja Rozhd. 358. 1956.

合头菊属 he tou ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, annual or perennial, acaulescent and rosulate, or, exceptionally, caulescent with thick and hollow, densely leafy stem, sometimes from thin, vertical, subterranean shoot with scaly leaves. Rosette shoot inflated at apex to a flat, convex, hollow receptacle, carrying usually some to numerous, densely crowded sessile or subsessile capitula, often with a reduced, linear subtending leaf. Capitula with 3 or 5 florets. Involucre narrowly cylindric. Phyllaries in 1 row; outer phyllaries absent; inner phyllaries 3 or 5, ± lanceolate, subequal in length, connate in basal part, hardened at maturity. Receptacle naked. Florets yellow or pale to medium purplish. Achene obconical, compressed, with 5 ribs, apex truncate. Pappus of grayish white, with scabrid bristles, usually caducous.

● Five species: China.

The species formerly treated as *Syncalathium souliei* (incl. *S. orbiculariforme*) is not a congener and is not even part of subtribe Crepidinae; it is a member of subtribe Lactucinae and included in the genus *Melanoseris* (see *M. souliei*, p. 225).

1a. Capitula with 5 florets; phyllaries 5; florets yellow.
2a. Leaf blade narrowly obovate to narrowly oblanceolate; florets with ligule ca. 3 mm ..... 1. *S. disciforme*
2b. Leaf blade orbicular or ovate; florets with ligule 8–9 mm ..... 2. *S. chrysocephalum*
1b. Capitula with 3 florets; phyllaries 3 or 4; florets purplish.
3a. Leaf blade 3–8 cm; florets very pale rose ..... 5. *S. roseum*
3b. Leaf blade ≤ 3 cm; florets purple.
4a. Involucre 1.1–1.3 cm; anthers 5–6 mm; pappus 10–12 mm ..... 3. *S. porphyreum*
4b. Involucre 0.7–0.9 cm; anthers 2.5–4 mm; pappus 6–8 mm ..... 4. *S. kawaguchii*

1. Syncalathium disciforme (Mattfeld) Y. Ling, Acta Phytotax. Sin. 10: 286. 1965.

盘状合头菊 pan zhuang he tou ju

Crepis disciformis Mattfeld, Notizbl. Bot. Gart. Berlin-Dahlem 12: 685. 1935; *Lactuca disciformis* (Mattfeld) Stebbins; *Soroseris qinghaiensis* C. Shih; *Syncalathium qinghaiense* (C. Shih) C. Shih.

Herbs 2–5 cm tall, perennial, rosulate, acaulescent. Taproot slender. Rosette leaves narrowly obovate to oblanceolate, 2–5 × 0.4–1.5 cm, green or particularly on rachis tinged purplish red, sinuate-dentate to pinnately lobed with toothlike lobes, ± pilose, base attenuate into a basally widened petiole-like portion. Synflorescence flat conical, 2–7 cm in diam., with some to numerous capitula. Capitula with 5 florets. Involucre narrowly cylindric, 10–12 × ca. 3 mm. Phyllaries 5, lanceolate, abaxially sparsely pilose on midvein, apex rounded to obtuse. Florets yellow, ligule ca. 3 mm. Achene brown, obconical, 3–4 mm, compressed, apex truncate. Pappus 6–8 mm. Fl. and fr. Sep–Oct. $2n = 16$*.

● Alpine meadows, scree slopes, mountain slopes, gravelly areas; 3900–4800 m. Gansu, Qinghai, Sichuan.

Led astray by the collector's note, Mattfeld described the species as having purple florets, although he stated that the corolla appears yellow in the type material. The erroneous color designation has since been repeated in the literature, but it is clear that the species in fact has yellow florets. Leaf incision varies even within a population from weakly sinuate-dentate to pinnately lobed. Therefore, no differences exist with

Syncalathium qinghaiense; following S. W. Liu (Fl. Qinghai. 3: 497. 1996), the two species are considered as conspecific.

2. Syncalathium chrysocephalum (C. Shih) S. W. Liu, Fl. Qinghai. 3: 498. 1996.

黄花合头菊 huang hua he tou ju

Soroseris chrysocephala C. Shih, Acta Phytotax. Sin. 31: 449. 1993.

Herbs 3–5 cm tall, perennial, rosulate, acaulescent. Taproot slender. Rosette leaves ovate to ovate-orbicular, 2–8 × 0.8–1.5 cm, green or tinged purplish red, glabrous or ± villous, base abruptly contracted into a basally widened winged or unwinged petiole-like portion with or without a few pairs of small lateral lobes, margin dentate, apex obtuse, acute, or rounded. Synflorescence flat conical, 2–3 cm in diam., with few to some capitula. Capitula with 5 florets. Involucre narrowly cylindric, 10–12 × ca. 3 mm. Phyllaries 5, lanceolate, abaxially sparsely pilose, apex rounded. Florets yellow, ligule 8–9 mm. Achene brown, obconical, ca. 3 mm, compressed. Pappus 6–7 mm. Fl. Jul. 2*n* = 16*.

● Scree slopes; 4100–4700 m. Qinghai, E Xizang (Qamdo).

3. Syncalathium porphyreum (C. Marquand & Airy Shaw) Y. Ling, Acta Phytotax. Sin. 10: 287. 1965.

紫花合头菊 zi hua he tou ju

Crepis glomerata Decaisne var. *porphyrea* C. Marquand & Airy Shaw, J. Linn. Soc., Bot. 48: 194. 1929; *Lactuca porphyrea* (C. Marquand & Airy Shaw) Stebbins.

Herbs 2–5 cm tall, perennial, rosulate, acaulescent. Taproot slender. Rosette leaves green to tinged purplish red, with an unwinged basally widened petiole-like portion to 2.5 cm and apically pubescent; leaf blade elliptic, obovate, or spatulate, 1–2 × 0.7–1 cm, abaxially glabrous, adaxially sparsely white pubescent, base broadly cuneate, margin with small irregular sharp teeth, apex obtuse. Synflorescence flat conical, with numerous capitula. Capitula with 3 florets. Involucre narrowly cylindric, 11–13 × 2–3 mm. Phyllaries 3 or 4, lanceolate, apically pubescent. Florets purple, ligule 7–9 mm. Anthers 5–6 mm. Achene obconical, compressed. Pappus 1–1.1 cm. Fl. and fr. Aug.

● Mountain slopes; ca. 4500 m. Qinghai, Xizang.

4. Syncalathium kawaguchii (Kitamura) Y. Ling, Acta Phytotax. Sin. 10: 287. 1965.

合头菊 he tou ju

Lactuca kawaguchii Kitamura, Acta Phytotax. Geobot. 15: 72. 1953; *Syncalathium pilosum* (Y. Ling) C. Shih; *S. sukaczevii* Lipschitz; *S. sukaczevii* var. *pilosum* Y. Ling.

Herbs 1–5 cm tall, rosulate, acaulescent to subacaulescent. Taproot slender. Rosette leaves petiolate; petiole 2–3 cm, wings sometimes dentate; leaf blade often dark purple, ovate, oblanceolate, or elliptic, 1.5–3 × 0.5–2 cm, undivided to basally lyrately pinnate, glabrous to white villous, base cuneate, margin shallowly to coarsely dentate, apex rounded to obtuse. Synflorescence flat conical, 2–6 cm in diam., with some to numerous capitula. Capitula with 3 florets. Involucre narrowly cylindric, 7–9 × 2–3 mm. Phyllaries 3 or 4, lanceolate, abaxially glabrous or white villous, apex obtuse. Florets purple, ligule 5–7 mm. Anthers 2.5–4 mm. Achene brown, obconical, ca. 3 mm, compressed, apex truncate. Pappus 6–8 mm. Fl. and fr. Jun–Oct. 2*n* = 16*.

● Alpine steppes, scree slopes, gravelly areas in dry river valleys; 3800–5400 m. Qinghai, Xizang.

Syncalathium kawaguchii is certainly closely related to *S. porphyreum*, which, as the holotype shows, also has 3 florets and 3 or 4 phyllaries, and their delimitation should be reassessed on the basis of more material. Leaf shape is variable even within the same population from undivided to pinnately lobed.

5. Syncalathium roseum Y. Ling, Acta Phytotax. Sin. 10: 287. 1965.

红花合头菊 hong hua he tou ju

Herbs, perennial, rosulate and acaulescent or exceptionally caulescent with a thick hollow densely leafy stem to 20 cm tall. Taproot slender. Leaves glabrous; petiole to 1 cm, broadly winged; leaf blade obovate, elliptic, or ovate, 3–8 × 0.5–2.2 cm, base cuneate, margin coarsely dentate, apex rounded to obtuse. Leaves immediately below synflorescence somewhat smaller. Synflorescence flat conical, 5–6 cm in diam., with numerous capitula. Capitula with 3 florets. Involucre narrowly cylindric, 10–13 × ca. 3 mm. Phyllaries 3(or 4), lanceolate, abaxially glabrous, apex obtuse to rounded. Florets pale rose. Achene not seen when mature, brown, obconical, compressed, apex truncate. Pappus 8–9 mm. Fl. and fr. Aug.

● Sandy riverbanks; 3700–3800 m. SC Xizang (Zhanang).

The elevation of "3100 m" given in the original description of *Syncalathium roseum* is probably erroneous. Recently, it has been found in the area of the type locality along the Yarlung Zangbo Jiang only at the higher elevation given above (J. W. Zhang, per. comm.).

78. HOLOLEION Kitamura, Acta Phytotax. Geobot. 10: 301. 1941.

全光菊属 quan guang ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, perennial, ± glabrous, with rhizomes. Stems well developed, erect, leafy. Basal and stem leaves linear-lanceolate, grasslike. Synflorescence laxly paniculiform to corymbiform, with few to many capitula. Capitula erect; peduncle wiry, few to some cm. Involucre cylindric. Phyllaries glabrous; outer phyllaries in several series, gradually longer centripetally, longest ca. 1/2 as long as inner ones; inner phyllaries ± linear-lanceolate, ± equal in length. Receptacle naked. Florets yellow. Achene blackish brown and straw-colored mottled, subcylindric to weakly angular, with 5 weak main ribs, secondary ribs indistinct, base attenuate, apex truncate. Pappus straw-colored, of scabrid brittle bristles.

About three species: E Asia; one species in China.

1. Hololeion maximowiczii Kitamura, Acta Phytotax. Geobot. 10: 303. 1941.

全光菊 quan guang ju

Hieracium hololeion Maximowicz, Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 9: 182. 1859; *H. sparsum* Frivaldszky subsp. *hololeion* (Maximowicz) Zahn.

Herbs, perennial, rhizomatous. Stem 60–100 cm tall, erect, branched in upper half, leafy. Basal leaves few, present or absent at anthesis. Basal and lower stem leaves linear-lanceolate, usually 15–40 × 0.5–2(–3) cm, base ± expanded and semiamplexicaul, margin entire, apex acute to acuminate. Middle and upper stem leaves similar to basal leaves but gradually smaller upward on stem; uppermost stem leaves linear-subulate, reduced in size. Synflorescence paniculiform to paniculiform-corymbiform, usually with 10–25 capitula. Capitula with 20–25 florets; peduncle wiry, usually 0.5–3 cm. Involucre cylindric, 1–1.3 cm. Phyllaries with an obtuse apex; outer phyllaries ovate to broadly lanceolate, longest 5–6 mm; inner phyllaries 12–14, apically ciliate. Florets pale yellow. Achene ca. 6 mm. Pappus ca. 7 mm, ± caducous. Fl. and fr. Jul–Sep.

Meadows, marshy meadows, damp places near small streams; 700–2200 m. Heilongjiang, Jiangsu, Jilin, ?Liaoning, Nei Mongol, ?Shandong, Zhejiang [Japan, Korea, SE Russia].

79. NABALUS Cassini in F. Cuvier, Dict. Sci. Nat. 34: 94. 1825.

耳菊属 er ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Herbs, perennial. Stem erect, leafy. Synflorescence paniculiform, with many capitula. Capitula often nodding, with 5–25 florets. Involucre narrowly cylindric to narrowly campanulate. Phyllaries in few series; outer phyllaries gradually longer centripetally, to 1/2 as long as inner ones; inner phyllaries ± equal in length. Receptacle naked. Florets yellow, pale purplish, whitish, or greenish. Achene columnar to narrowly fusiform, with 5 weaker or stronger main ribs alternating with 2–4 ± conspicuous secondary ribs, apex truncate. Pappus brownish, of scabrid brittle bristles.

About 15 species: E Asia, North America; two species in China.

The presence of *Nabalus acerifolius* Maximowicz in China, given by W. Wang and C. Y. Li (Fl. Pl. Herb. Chin. Bor.-Orient. 9: 419. 2004) under the name *Prenanthes acerifolia* (Maximowicz) Matsumura, appears most unlikely. The bluish white flowered species with palmately 3–7-lobed, long petiolate, mostly basal leaves, is otherwise considered as endemic to Japan.

1a. Capitula with 20–25 florets; florets yellow; achene 7–8 mm ..... 1. *N. ochroleucus*
1b. Capitula with 5 florets; florets pale purplish, or whitish, or greenish; achene 3.5–4.5 mm ..... 2. *N. tatarinowii*

1. Nabalus ochroleucus Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 15: 376. 1871.

耳菊 er ju

Lactuca blinii H. Léveillé; *L. ochroleuca* (Maximowicz) Franchet; *Prenanthes blinii* (H. Léveillé) Kitagawa; *P. maximowiczii* Kirpicznikov, nom. illeg. superfl.; *P. ochroleuca* (Maximowicz) Hemsley.

Herbs to 90 cm tall, perennial, with thick rhizomes. Stem solitary, erect, branched in apical portion, with scaly dark brown and crisped hairs or glabrous. Lower and middle stem leaves petiolate; petiole to 26 cm, basally expanded and semiamplexicaul, wing sinuate-dentate; leaf blade lyrately pinnatisect, adaxially usually with multicellular brown hairs, margin irregularly coarsely sinuate-dentate; lateral lobes 1 or 2 pairs, elliptic, rhombic, or irregularly rhombic, 5.5–7 × ca. 4 cm, basal ones smaller; terminal lobe broadly triangular to irregularly orbicular, 6–9 × 5–9 cm. Upper stem leaves with petiole to 4.5 cm; leaf blade triangular, smaller, undivided, otherwise similar to middle stem leaves; uppermost stem leaves sessile, lanceolate, with an expanded amplexicaul base. Synflorescence paniculiform with virgate racemiform branches, with numerous capitula, axes densely covered with multicellular crisped hairs. Capitula with 20–25[–30] florets. Involucre narrowly campanulate, 13–15 × ca. 7 mm. Phyllaries dark green when dry, abaxially with scaly hairs or glabrous, apex acute; outer phyllaries linear-lanceolate, longest ca. 1/2 as long as inner ones; inner phyllaries 10–12, linear-lanceolate. Florets pale yellow. Achene brown, ± columnar, 7–8 mm, somewhat compressed, apex truncate. Pappus brownish, 6–7 mm. Fl. and fr. Aug–Sep. 2*n* = 16.

Moist areas in forests; 100–200 m. Jilin [Korea, SE Russia].

2. Nabalus tatarinowii (Maximowicz) Nakai, Fl. Sylv. Kor. 14: 116. 1923.

盘果菊 pan guo ju

Herbs 0.5–2 mm tall, perennial. Stem solitary, erect, virgately branched usually in upper half, glabrous or subglabrous. Lower and middle stem leaves sparsely pilose with fine multicellular hairs and hispidulous with stiff subulate hairs; petiole 7–17 cm. Leaf blade of lower and middle stem leaves for subsp. *tatarinowii* either ovate to triangular-ovate, 5–15 × 6–15 cm, undivided, base cordate, hastate, truncate, or cuneate, margin subentire to sinuate-dentate with mucronate teeth, and apex acute to acuminate or leaf blade additionally with 1 pair of elliptic to obliquely ovate lateral lobes 0.6–5.5 × 0.4–4.5 cm. Leaf blade of lower and middle stem leaves for subsp. *macrantha* to 29 × 22 cm and divided; lateral lobes 1–3 pairs, elliptic, ovate, or lanceolate, much smaller than terminal lobe, margin subentire to coarsely sinuate-dentate with mucronate teeth, apex acute; terminal lobe broadly triangular-ovate, suborbicular, or broadly lanceolate in outline, pinnatipartite to pinnatisect with segments lanceolate, elliptic, or oblanceolate, base cordate to cuneate, margin coarsely sinuate-dentate with mucro-

nate teeth, apex acute to acuminate. Upper and uppermost stem leaves similar to middle stem leaves in division but smaller and broadly triangular-ovate, linear-lanceolate, subrhombic, broadly ovate, or ovate, base truncate to cuneate, apex shortly to long acuminate. Synflorescence paniculiform, with some to many capitula. Capitula pendent at anthesis, erect in fruit, with ca. 5 florets; peduncle capillaceous, shorter than involucre, often densely pilose with multicellular hairs. Involucre narrowly cylindric, 10–13 × 1.5–2.5 mm. Outer phyllaries few, ovate to triangular-ovate, longest 2–3 mm, apex acute to obtuse; inner phyllaries 5, linear-lanceolate to linear, ± with scarious margin abaxially often sparsely pilose, apex obtuse to rounded. Florets pale purple, pink, whitish, or greenish. Anther tube brownish purple. Achene brown, 3.5–4.5 mm, apex truncate. Pappus brown to brick-colored, 6–8 mm.

Mountain slopes, forests in mountain valleys, forest margins, forests, grasslands, moist places by water, moist places with thick grass; 500–3000 m. Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan [Korea, SE Russia].

Plants with ± deeply dissected terminal leaf lobe apparently occur in the central part of the distribution range of *Nabalus tatarinowii*, and they have been treated as a variety (*N. tatarinowii* var. *divisa*), subspecies (*Prenanthes tatarinowii* subsp. *macrantha*), or separate species (*P. macrophylla*). Stebbins (Contr. U.S. Natl. Herb. 28: 672. 1941) stated a correspondence of the pinnately lobed terminal leaf lobe with longer involucres (presumed to represent a tetraploid cytotype as inferred from pollen size). However, involucres to 1.3 cm also occur in plants with undivided terminal leaf lobes, and this corroborates Stebbins's summarizing statement that the species "consists of a complex of closely interrelated diploid and polyploid forms" (loc. cit.). Today, still little is known about geographical and altitudinal distribution, ecology, and infrapopulational and interpopulational variation in this complex. For the time being, therefore, two entities are distinguished tentatively delimited by their conspicuous leaf features and, following Stebbins (loc. cit.), treated at the rank of subspecies. *Prenanthes angustiloba* and *P. leptantha*, each described on the basis of a single specimen from Sichuan with dissected leaves and delimited from this species by minor features of the leaf lobes, appear to fall within the range of variation of *N. tatarinowii* subsp. *macrantha*.

1a. Leaf blade or terminal leaf lobe of lower, middle, upper, and uppermost stem leaves undivided and at most shallowly sinuate-dentate ..... 2a. subsp. *tatarinowii*

1b. Leaf blade or terminal leaf lobes of lower, middle, and upper stem leaves deeply pinnately or palmately lobed, uppermost stem leaves often at least coarsely and deeply sinuate-dentate or more rarely subentire ..... 2b. subsp. *macrantha*

2a. Nabalus tatarinowii subsp. **tatarinowii**

盘果菊(原亚种) pan guo ju (yuan ya zhong)

Prenanthes tatarinowii Maximowicz, Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 9: 474. 1859; *Lactuca tatarinowii* (Maximowicz) Franchet; *Nabalus pyramidalis* (C. Shih) Sennikov; *N. racemiformis* (C. Shih) Sennikov; *P. pyramidalis* C. Shih; *P. racemiformis* C. Shih.

Lower and middle stem leaves with leaf blade either ovate to triangular-ovate, 5–15 × 6–15 cm, undivided, base cordate, hastate, truncate, or cuneate, margin subentire to sinuate-dentate with mucronate teeth, and apex acute to acuminate or leaf blade additionally with 1 pair of elliptic to obliquely ovate lateral lobes 0.6–5.5 × 0.4–4.5 cm. Upper and uppermost stem leaves with leaf blade broadly triangular-ovate, linear-lanceolate, subrhombic, broadly ovate, or ovate, similar to middle stem leaves but smaller and more frequently not divided, base truncate to cuneate, apex shortly to long acuminate. Fl. and fr. Aug–Oct. 2*n* = 16*.

Mountain slopes, forest margins, forests, grasslands, moist places by water; 500–3000 m. Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan [Korea, SE Russia].

2b. Nabalus tatarinowii subsp. **macrantha** (Stebbins) N. Kilian, **comb. nov.**

多裂耳菊 duo lie er ju

Basionym: *Prenanthes tatarinowii* subsp. *macrantha* Stebbins, Contr. U.S. Natl. Herb. 28: 672. 1941; *Nabalus angustilobus* (C. Shih) Sennikov; *N. leptanthus* (C. Shih) Sennikov; *N. tatarinowii* var. *divisa* Nakai & Kitagawa; *P. angustiloba* C. Shih; *P. leptantha* C. Shih; *P. macrophylla* Franchet; *P. tatarinowii* var. *divisa* (Nakai & Kitagawa) Kitagawa.

Lower and middle stem leaves with leaf blade to 29 × 22 cm and divided; lateral lobes 1–3 pairs, elliptic, ovate, or lanceolate, much smaller than terminal lobe, margin subentire to coarsely sinuate-dentate with mucronate teeth, apex acute; terminal lobe broadly triangular-ovate, suborbicular, or broadly lanceolate in outline, pinnatipartite to pinnatisect with segments lanceolate, elliptic, or oblanceolate, base cordate to cuneate, margin coarsely sinuate-dentate with mucronate teeth, apex acute to acuminate. Upper stem leaves similar to middle stem leaves but smaller and less divided; uppermost stem leaves elliptic, rhombic, or lanceolate, pinnatipartite or coarsely sinuate-dentate to entire, base cuneate, apex shortly acuminate to long acuminate. Fl. and fr. Jul–Oct.

● Mountain slopes, forests in mountain valleys, moist places with thick grass; 1100–2700 m. Gansu, Hebei, Henan, Shaanxi, Shanxi, Sichuan.

80. SOROSERIS Stebbins, Mem. Torrey Bot. Club 19(3): 27. 1940.

绢毛菊属 juan mao ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Stebbinsia Lipschitz; *Tibetoseris* Sennikov.

Herbs, perennial, rosulate, often acaulescent, sometimes from a stout vertical subterranean rosette shoot with scalelike leaves

(cataphylls) below leaf rosette or caulescent with a thick hollow stem. Leaves rosulate or along stem. Rosette shoot inflated at apex to a convex, hollow receptacle or rarely elongated to a hollow cylindric axis, carrying usually numerous, densely crowded capitula. Capitula with 4(or 5) or 15–30 florets; peduncle mostly shorter to rarely longer than involucre. Involucre narrowly cylindric or rarely campanulate. Phyllaries in few series; outer phyllaries mostly 2, linear, similar to uppermost leaves; inner phyllaries 4–15, ± lanceolate, subequal in length, connate or distinct in basal part, herbaceous at maturity. Receptacle naked. Florets yellow, sometimes basally blackish, more rarely white. Achene subcylindric, subfusiform, obcolumnar, or narrowly obconical, subcompressed, with 5 mostly rather slender and sometimes weak main ribs and 1–3(or 4) secondary often ± subequal ribs in between but otherwise smooth, inconspicuously or rarely apically conspicuously acutely papillate, apex ± truncate or rarely shortly beaked. Pappus whitish to straw-colored, often apically grayish, bristles stiff, coarse, scabrid, and usually ± caducous.

About seven species: Bhutan, W China, N India, Kashmir, Nepal, Pakistan; seven species in China.

Cytological and molecular work by J. W. Zhang et al. (Bot. J. Linn. Soc. 154: 79–87. 2007; Taxon 60: 15–26. 2011) confirmed the very close relationship between the monotypic genus *Stebbinsia* (accommodating *S. umbrella*) and *Soroseris*, and supports its unification with the latter. Further evidence comes from the molecular phylogenetic analysis of subtribe Crepidinae by J. W. Zhang et al. (in prep.) revealing that *Youngia depressa*, recently separated for convincing morphological reasons from *Youngia* (see also there, p. 252) in a new genus *Tibetoseris* (Sennikov & I. D. Illarionova, Komarovia 5: 96. 2008), which subsequently was, similarly convincingly, most recently recircumscribed to become a monotypic genus for *Y. depressa* by D. Maity & Maiti (Compositae Newslett. 48: 22–42. 2010), actually is also nested in the clade of *Soroseris*. *Soroseris depressa*, in fact, well agrees morphologically; it strongly resembles *S. umbrella* in leaf shape and habit, while in the number of phyllaries it is intermediate between *S. umbrella* and the remainder of *Soroseris*. We therefore understand *Soroseris* in this wider sense, including both *Stebbinsia* and *Tibetoseris* s.s. As has been shown by J. W. Zhang et al. (Taxon 60: 15–26. 2011), speciation in *Soroseris* is rather recent, their relationship being not resolved in their molecular analyses. Also morphologically, distinction is not always easy, especially between *S. glomerata* and *S. hookeriana*, and more studies are needed.

1a. Rosette leaves orbicular to ovate and abruptly contracted into an unwinged petiole-like basal portion; involucre with 8–15 inner phyllaries; capitula with 15–30 florets.
  2a. Rosette leaves mostly < 3 cm wide; involucre with 10–15 inner phyllaries; florets white; achene apex truncate ..... 1. *S. umbrella*
  2b. Rosette leaves mostly > 3 cm wide; involucre with ca. 8 inner phyllaries; florets yellow; achene apex shortly beaked ..... 2. *S. depressa*
1b. Rosette leaves and lower stem leaves (if any) spatulate, elliptic, or lanceolate and very gradually attenuate toward base; involucre with 4 or 5 inner phyllaries; capitula with 4 or 5 florets.
  3a. Synflorescence elongate and cylindric ..... 7. *S. teres*
  3b. Synflorescence hemispheric.
    4a. Leaves pinnatifid to pinnatisect (rarely mostly entire and only few of them pinnately lobed); leaf rosette present; achene usually with an attenuate apex; pappus (0.7–)0.9–1.5 cm ..... 6. *S. hookeriana*
    4b. Leaves undivided and entire to coarsely dentate; leaf rosette present or not; achene usually with a truncate apex; pappus 0.7–1.1 cm.
      5a. Scalelike leaves (cataphylls) in basal portion below well-developed leaves missing or very few; well-developed leaves usually along an aerial stem (to 30 cm tall); leaf margin entire and flat or undulate ..... 5. *S. erysimoides*
      5b. Scalelike leaves (cataphylls) in subterranean or basal portion below leaf rosette usually some to many; well-developed leaves usually rosulate; leaf margin entire to remotely dentate or coarsely dentate.
        6a. Leaf margin entire or remotely denticulate; involucre 1–1.5 cm ..... 3. *S. glomerata*
        6b. Leaf margin coarsely dentate; involucre 0.7–0.9 cm ..... 4. *S. pumila*

1. Soroseris umbrella (Franchet) Stebbins, Mem. Torrey Bot. Club 19(3): 33. 1940.

肉菊 rou ju

Crepis umbrella Franchet, J. Bot. (Morot) 9: 255. 1895; *Stebbinsia umbrella* (Franchet) Lipschitz.

Herbs 3–15 cm tall, perennial, rosulate. Taproot ramose or simple. Rosette shoot with conspicuous subterranean portion with cataphylls. Cataphylls below rosette leaves numerous, ovate to lanceolate but higher up also linear, 1–3 × 0.3–1 cm, apex acute. Above-ground leaves in a ± dense leaf rosette, often purplish red; petiole-like basal portion 4–18 cm, sometimes winged and apically pinnately lobed, sparsely brownish yellow pilose; bladelike portion orbicular, ovate, or ovate-elliptic, 2–15 × (1.5–)3–11 cm, glabrous to ± pilose, base shallowly cordate to cuneate, margin mucronulately dentate and sinuate-dentate, apex rounded. Synflorescence umbelliform to corymbiform, with some to many capitula. Capitula with 15–30 florets; peduncle of 1.5–8 cm, thick, ± pilose. Involucre campanulate, 1.4–2 × 0.8–1.5 cm. Phyllaries dark green to blackish; outer phyllaries few, linear, approaching inner ones in length, mostly pilose; inner phyllaries 10–15, abaxially or on midvein pilose, apex acute to obtuse. Florets white. Achene some shade of brown, columnar to obcolumnar, 4–6 mm, weakly ribbed, between main ribs usually with ca. 3 often inconspicuous secondary ribs, apex truncate. Pappus whitish, ca. 1 cm. Fl. and fr. Jul–Sep. 2*n* = 16*.

Alpine meadows, scree slopes; 2600–4600 m. Sichuan, Xizang, Yunnan [Bhutan, India (Sikkim)].

2. Soroseris depressa (J. D. Hooker & Thomson) J. W. Zhang, N. Kilian & H. Sun, **comb. nov.**

矮生绢毛菊 ai sheng juan mao ju

Basionym: *Crepis depressa* J. D. Hooker & Thomson, Fl. Brit. India 3: 397. 1881; *Lactuca cooperi* J. Anthony; *L. pseudoumbrella* D. Maity & Maiti; *Tibetoseris depressa* (J. D. Hooker & Thomson) Sennikov; *Youngia depressa* (J. D. Hooker & Thomson) Babcock & Stebbins.

Herbs 2–3 cm tall, perennial, rosulate, acaulescent, with a taproot. Caudex woody. Rosette leaves with a basally gradually widened petiole as long as or longer than blade; leaf blade orbicular, broadly ovate, or deltoid, 1.5–4 × 1–3.5 cm, adaxially puberulent, base broadly cuneate to rounded, margin subentire to sinuate-dentate, apex obtuse, rounded, or acute. Synflorescence subumbellate to ± hemispheric, 3–5 cm in diam., with some to many closely crowded capitula. Capitula with 15–20 florets; peduncle usually 0.5–2 cm. Involucre green or purplish red, cylindric, 1.3–1.6 cm. Phyllaries ± setose along midvein; outer phyllaries several, linear-lanceolate, 3–4 mm, almost equal in length, apex acute; inner phyllaries ca. 8, midvein subapically often faintly crested, margin ± scarious, apex obtuse to acute. Florets yellow. Anther tube greenish. Style blackish upon drying. Achene dark brown mottled with yellow, subfusiform to columnar, 6–7 mm, main ribs rather strong and alternating with usually a single somewhat more slender secondary rib, apically acutely papillate, apex attenuate into a yellowish ca. 1 mm beak. Pappus white, 9–10 mm. Fl. and fr. Aug–Sep. 2*n* = 16.

Grasslands on mountain slopes, alpine meadows; 3200–4500 m. Xizang [Bhutan, India (Sikkim), Nepal].

A subspecies with pinnatisect leaves and shorter achene and pappus described from India (Sikkim) and Nepal (as *Tibetoseris depressa* subsp. *gauri* D. Maity, Candollea 65: 213. 2010) is so far not known to occur in China.

3. Soroseris glomerata (Decaisne) Stebbins, Mem. Torrey Bot. Club 19(3): 33. 1940.

绢毛菊 juan mao ju

Prenanthes glomerata Decaisne in Jacquemont, Voy. Inde 4(Bot.): 99. 1843; *Crepis gillii* S. Moore var. *bellidifolia* Handel-Mazzetti; *C. glomerata* (Decaisne) Bentham & J. D. Hooker; *C. rosularis* Diels; *C. sorocephala* Hemsley; *Lactuca deasyi* S. Moore; *Soroseris bellidifolia* (Handel-Mazzetti) Stebbins; *S. deasyi* (S. Moore) Stebbins; *S. rosularis* (Diels) Stebbins.

Herbs, perennial, rosulate. Taproot ramose or not ramose. Rosette shoot with conspicuous subterranean portion with cataphylls. Cataphylls below leaf rosette numerous, ovate, long ovate, or narrowly lanceolate, 7–15 × 3–5 mm, apex acute. Above-ground leaves in a dense to loose rosette, with ± winged petiole-like 1.5–6 cm base; bladelike portion spatulate, broadly elliptic, or obovate, 2–3.5 × 0.4–1 cm, white villous or glabrous, base cuneate, margin entire or weakly dentate. Synflorescence flat to ± hemispheric, 3–5 cm in diam., with numerous closely crowded capitula. Capitula with 4 or 5 florets; peduncle 2–15 mm. Involucre narrowly cylindric, 10–15 × 2–3 mm. Outer phyllaries linear, shorter or longer than inner ones, ca. 1 mm wide, pilose; inner phyllaries 4 or 5, pilose or rarely glabrous, apex obtuse, acute, or rounded. Florets yellow or rarely white. Anther tube yellowish, reddish, or blackish. Style yellowish, greenish, or blackish. Achene brown, narrowly obconical, 5–8 mm, subequally ribbed and between main ribs usually with 3 or 4 secondary ribs, apex ± truncate. Pappus whitish or straw-colored and grayish apically, 7–11 mm. Fl. and fr. May–Sep. 2*n* = 16*, 32*.

Meadows, scree slopes; 3200–5600 m. Gansu, Qinghai, Sichuan, Xinjiang, Xizang, Yunnan [N India, Kashmir, Nepal, Pakistan].

Soroseris glomerata is here treated in a wider sense, rather representing a complex, and including three little-known entities, *Soroseris bellidifolia*, *S. deasyi*, and *S. rosularis*. Variation, distribution, and delimitation of taxa (probably most appropriately on subspecies rank) in this complex are insufficiently known at present and in need of revision.

4. Soroseris pumila Stebbins, Mem. Torrey Bot. Club 19(3): 38. 1940.

矮小绢毛菊 ai xiao juan mao ju

Herbs, perennial, rosulate, with a taproot. Rosette shoot with conspicuous subterranean portion with cataphylls. Cataphylls below rosette leaves several to many, ovate to narrowly lanceolate and higher up linear, apex acute. Above-ground leaves in a dense rosette, often abaxially purplish, with a 1–5 cm petiole; leaf blade spatulate, 0.5–2.5 × 0.3–1 cm, ± pilose, base cuneate, margin coarsely dentate to shallowly pinnatifid, apex obtuse. Synflorescence flat to ± hemispheric, with numerous closely crowded capitula. Capitula with 4 florets; peduncle 2–10 mm. Involucre narrowly cylindric, 7–9 × 3–4 mm. Outer phyllaries ca. 2, linear, slightly longer than inner ones, pilose; inner phyllaries 4, apex obtuse to subacute. Florets yellow. Anther tube and style blackish. Achene brown, subfusiform, 3.5–4.5 mm. Pappus whitish to straw-colored and grayish apically, 8–10 mm.

Scree slopes; 4300–4900 m. S Xizang (Yadong) [Bhutan, India (Sikkim)].

5. Soroseris erysimoides (Handel-Mazzetti) C. Shih, Acta Phytotax. Sin. 31: 444. 1993.

空桶参 kong tong shen

Crepis gillii S. Moore var. *erysimoides* Handel-Mazzetti, Acta Horti Gothob. 12: 355. 1938; *Soroseris hookeriana* Stebbins subsp. *erysimoides* (Handel-Mazzetti) Stebbins.

Herbs, perennial, usually conspicuously caulescent, usually without scalelike leaves above root. Taproot long. Stem solitary, 5–30 cm tall, 1–2 cm in diam., erect, hollow, leafy. Leaves oblanceolate, lanceolate, elliptic, or linear, 2–11 × 0.2–1.5 cm, base long attenuate, margin entire and flat or undulate, apex obtuse to rounded; upper leaves on stem similar but gradually smaller, glabrous or ± pilose; uppermost leaves on stem subtending capitula and on peduncles reduced in size, almost linear, 15–20 × < 1 mm, glabrous to pilose. Synflorescence ± hemispheric, with numerous closely crowded capitula. Capitula with 4 florets; peduncle usually shorter than capitulum. Involucre narrowly cylindric, 7–12 × 2–3 mm. Phyllaries olive to dark green, glabrous or sparsely pilose; outer phyllaries ca. 2, similar to uppermost reduced leaves, mostly ± as long as to longer than inner ones; inner phyllaries 4. Florets yellow. Anther tube and style blackish. Achene brown, subfusiform to obcolumnar, 4–6 mm, subequally ribbed and between main ribs

usually with 2 or 3 secondary ribs. Pappus whitish to straw-colored and grayish apically, 7–11 mm. Fl. and fr. Jun–Oct. 2*n* = 16*.

Alpine thickets, meadows, scree slopes; 3000–3500 m. Gansu, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India (Sikkim), Nepal].

The entire plant is used medicinally mainly for treating fractures.

Soroseris erysimoides is the most widespread and common species of the genus in China. It shares the conspicuously developed leafy stem with the following two species.

6. Soroseris hookeriana Stebbins, Mem. Torrey Bot. Club 19(3): 45. 1940.

皱叶绢毛菊 zhou ye juan mao ju

Crepis hookeriana C. B. Clarke, Compos. Ind. 255. 1876, not Ball (1873); *C. gillii* S. Moore; *C. gillii* var. *hirsuta* J. Anthony; *C. trichocarpa* Franchet; *Soroseris gillii* (S. Moore) Stebbins; *S. gillii* subsp. *handelii* Stebbins; *S. gillii* subsp. *occidentalis* Stebbins; *S. hirsuta* (J. Anthony) C. Shih; *S. occidentalis* (Stebbins) Tzvelev; *S. trichocarpa* (Franchet) C. Shih.

Herbs, perennial, with a long taproot, usually without cataphylls above root, acaulescent and rosulate to conspicuously caulescent with a solitary stem. Stem (if present) to 10(–20) cm tall, erect, hollow, distally glabrous or white to brownish pilose, leafy. Leaves lanceolate to oblanceolate, 2–9 × 0.3–2 cm, shallowly pinnatifid to runcinately pinnatisect or very rarely most leaves undivided, glabrous to pilose, base long attenuate into a ± winged or unwinged petiole-like portion, margin flat or undulate, apex acute; lobes ± triangular, margin entire or sparsely dentate, apex acute; upper leaves on stem gradually smaller, mostly ± pilose; uppermost leaves on stem subtending capitula and on peduncles reduced, linear, pilose or more rarely glabrous, margin entire. Synflorescence ± hemispheric, with numerous closely crowded capitula. Capitula with 4 florets. Peduncle usually shorter than capitulum. Involucre narrowly cylindric, (8–)10–15(–17) × 2–3 mm. Phyllaries usually dark green, mostly pilose; outer phyllaries ca. 2, similar to uppermost reduced leaves, mostly ± as long as to longer than inner phyllaries; inner phyllaries 4, glabrous or abaxially pilose along midvein. Florets yellow, sometimes with blackish corolla tube and ligule base. Anther tube and style blackish. Achene brown, subfusiform to very narrowly obconic, 4–5 mm, subequally ribbed, between main ribs usually with 1 or 2(or 3) secondary ribs, often shortly acutely papillose, base attenuate, apex shorter or longer attenuate. Pappus whitish to straw-colored and mostly ± grayish apically, (0.7–)0.9–1.5 cm. Fl. and fr. Jul–Aug. 2*n* = 16*.

Alpine meadows, scree slopes, rocky slopes, alpine thickets, rock crevices in glacial streams; 2800–5500 m. Gansu, Qinghai, Sichuan, Xizang, Yunnan [Bhutan, N India, Nepal].

Stebbins (Mem. Torrey Bot. Club 19(3): 41. 1940) has already stated that delimitation between *Soroseris hookeriana* and *S. gillii* is problematic and may need reconsideration. It still can be agreed with Stebbins that delimitation of his former *S. hookeriana* subsp. *erysimoides* (now treated as a separate species *S. erysimoides*) from both the typical subspecies and *S. gillii* appears sound. On the basis of the richer material meanwhile available, Stebbins's delimitation of *S. gillii* (the correct name of which would actually be *S. trichocarpa*) from *S. hookeriana* subsp. *hookeriana*, however, fails, as does his infraspecific classification of the variation, mainly in the size of the involucres and in the indumentum, within *S. gillii*. Actually *S. gillii* and *S. hookeriana* belong to the same complex, widespread in W China, the subdivision of which (probably most appropriately at subspecies level) is in need of revision. Also included is *S. hirsuta*, based on *Crepis gillii* var. *hirsuta*, which separates the pilose plants of this complex and seems particularly artificial. For the time being, it appears at least a pragmatic solution to treat this complex as a single species.

7. Soroseris teres C. Shih, Acta Phytotax. Sin. 31: 447. 1993.

柱序绢毛菊 zhu xu juan mao ju

Herbs, perennial, conspicuously caulescent, without cataphylls above root. Taproot long. Stem solitary, 10–33 cm tall, 1–2 cm in diam., erect, hollow, leafy. Leaves narrowly elliptic, 4–13 × 1.5–3.5 cm, pinnatipartite to pinnatisect, glabrous or sparsely pilose, lobes ± triangular; upper stem leaves similar but gradually smaller and densely pilose. Synflorescence cylindric, elongate, to 13 cm, with numerous densely crowded capitula. Capitula with 4 florets. Peduncle < 10 mm. Involucre narrowly cylindric, 10–11 × 2–3 mm. Phyllaries dark green, densely pilose; outer phyllaries 2, linear, ca. 10 × 0.5 mm, yellow pilose; inner phyllaries 4, brown villous, apex obtuse. Florets yellow. Anther tube and style blackish. Achene cylindric to subfusiform, ca. 5 mm, subequally ribbed and between main ribs usually with 3 or 4 secondary ribs, apex truncate. Pappus whitish but grayish apically, 0.9–1.1 cm. Fl. and fr. Jul–Sep. 2*n* = 16*.

Alpine meadows, thickets; 3900–4300 m. S Xizang (Yadong) [Bhutan].

81. HYPOCHAERIS Linnaeus, Sp. Pl. 2: 810. 1753.

猫儿菊属 mao er ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Achyrophorus Scopoli; *Trommsdorffia* Bernhardi.

Herbs, perennial or rarely annual, often rosulate, usually with rigid simple hairs. Stems solitary to few [or sometimes acaulescent], usually sparsely branched or more rarely simple, leafless or sparsely leafy. Synflorescence single-headed or weakly corymbiform with few to several capitula. Heads with ca. 20 to many florets. Involucre cylindric, narrowly campanulate, or broadly hemispheric. Phyllaries ± glabrous or hispid; outer phyllaries in several series, gradually longer centripetally, ± imbricate, often ca. 3/4 or more as long as inner ones; inner phyllaries ± linear-lanceolate to linear, ± equal in length. Receptacle with linear scarious scales ± as long as involucre and enclosing base of florets. Florets yellow or white. Achene mostly rather long, homomorphic or dimorphic; body cylindric to fusiform, with 5 muricate main ribs, with or without secondary ribs, with or more rarely without a

slender to capillaceous beak often longer than body. Pappus white or dirty white, with all bristles stiffly fimbriately plumose or inner ones plumose and outer ones scabrid.

About 60 species: Asia, Mediterranean region, South America; six species (four introduced) in China.

1a. Pappus of two series of bristles with inner ones plumose and outer ones scabrid.
2a. Florets slightly exceeding involucre; inner achenes beaked, marginal ones not beaked ..... 3. *H. glabra*
2b. Florets much exceeding involucre; both inner and marginal achenes beaked ..... 4. *H. radicata*
1b. Pappus of one series of plumose bristles.
3a. Florets slightly exceeding involucre; involucre cylindric to narrowly campanulate.
4a. Florets white; involucre glabrous; base of stem leaves not clasping ..... 5. *H. albiflora*
4b. Florets yellow; involucre ± hirsute; base of stem leaves ± clasping ..... 6. *H. chillensis*
3b. Florets much exceeding involucre; involucre broadly campanulate.
5a. Stem usually leafless except for 1–3 smaller leaves, simple or sparingly branched; capitula 1–3; outer phyllaries linear-lanceolate; achene long beaked ..... 1. *H. maculata*
5b. Stem regularly leafy, simple; capitulum always 1; outer phyllaries ovate to broadly lanceolate; achene beakless ..... 2. *H. ciliata*

1. Hypochaeris maculata Linnaeus, Sp. Pl. 2: 810. 1753.

新疆猫儿菊 xin jiang mao er ju

Achyrophorus maculata (Linnaeus) Scopoli; *Trommsdorffia maculata* (Linnaeus) Bernhardi.

Herbs 30–120 cm tall, perennial, rosulate, with a taproot. Stem erect, simple or sparingly branched, hirsute, leafless or with 1(–3) leaves, base with dark brown residues of old leaf bases. Rosette leaves subovate, lanceolate, elliptic, or oblanceolate, 6–15 × 2–4 cm, often with reddish brownish blotches, hispidulous, basally ± attenuate, margin sinuate-dentate to subentire, apex obtusely rounded to acute. Stem leaf or leaves if any narrowly lanceolate to lanceolate, smaller than rosette leaves otherwise similar. Capitula 1–3, terminal, long pedunculate, with many florets. Involucre broadly campanulate to hemispheric, 1.5–2 × 1–2.5 cm. Outer phyllaries linear-lanceolate, hirsute, apex acute; inner phyllaries lanceolate, abaxially glabrous, apex acuminate. Florets yellow. Achene to 2 cm; body pale brown, ± fusiform, with 5 ribs, rugose, apically attenuate into a slender beak as long as or slightly longer than body. Pappus 7–12 mm, all bristles plumose. Fl. and fr. Jun–Aug. 2*n* = 10, 20.

Grassy slopes in mountainous regions, river valleys, forests, forest margins; above 1000 m. Xinjiang [Russia; Europe].

2. Hypochaeris ciliata (Thunberg) Makino, Bot. Mag. (Tokyo) 22: 37. 1908.

猫儿菊 mao er ju

Arnica ciliata Thunberg in Murray, Syst. Veg., ed. 14, 768. 1784; *Achyrophorus aurantiacus* Candolle; *A. ciliatus* (Thunberg) Schultz Bipontinus; *A. grandiflorus* (Ledebour) Ledebour; *Hypochaeris grandiflora* Ledebour; *Trommsdorffia ciliata* (Thunberg) Soják.

Herbs 20–60 cm tall, perennial, with a taproot. Stem erect, simple, glabrous or entirely or only basal half covered with rigid bristles, leafy, base with dark brown residue of old leaf bases. Basal leaves rosulate, elliptic, narrowly elliptic, or oblanceolate, 9–20 × 2–2.5 cm, scabrid, attenuate into winged petiole-like basal portion of 2–5 cm, margin ± sharply dentate, apex acute to rounded. Lower stem leaves similar to basal leaves; middle and upper stem leaves sessile, elliptic to ovate, smaller, ± sparsely arachnoid hairy, basally ± truncate and ± auriculately clasping, margin finely dentate, otherwise similar to lower leaves. Capitulum solitary, terminal on stem, with many florets. Involucre broadly campanulate to hemispheric, 1.5–2.5 × 1.5–2.5 cm. Phyllaries with ciliate margin and sparsely arachnoid hairy; outer phyllaries ovate to broadly lanceolate, conspicuously imbricate; inner phyllaries lanceolate. Florets golden yellow. Achene pale brown, cylindric, ca. 8 mm, with 15 ribs, apex slightly attenuate and truncate. Pappus ca. 1.5 cm, all bristles plumose. Fl. and fr. Jun–Sep. 2*n* = 10.

Grasslands on mountain slopes, forest margins, trailsides, thickets; 800–1200 m. Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Shanxi [Korea, Mongolia, E Russia].

3. Hypochaeris glabra Linnaeus, Sp. Pl. 2: 811. 1753.

光猫儿菊 guang mao er ju

Herbs 10–30 cm tall, annual, rosulate. Stems 1 or few, ascending to erect, simple or apically sparsely branched, glabrous, leafless or with few triangular-ovate bracts. Rosette leaves obovate to oblanceolate, 3–5 × 0.5–1.5 cm, subglabrous to hispidulous, base narrowed, margin sinuate-dentate, apex rounded to subacute. Synflorescence single-headed or weakly corymbiform with few to several capitula. Capitulum with usually 20–40 florets; peduncle long. Involucre cylindric to narrowly campanulate, 7–10 × 3–4 mm at anthesis, 1.3–1.5 mm in fruit. Phyllaries ± glabrous; outer phyllaries lanceolate; inner phyllaries linear-lanceolate. Florets yellow, slightly longer than involucre. Achene brown, dimorphic; outer achenes cylindric, 3–4 mm, ribbed, muricate, truncate; inner achenes with fusiform body, 3–4 mm, ribbed, muricate, beak capillaceous and as long as or longer than body. Pappus 7–8 mm, inner bristles plumose, outer bristles scabrid and shorter. Fl and fr. Mar–Apr. 2*n* = 10.

Roadsides, waste places; near sea level to 100 m. Naturalized in W Taiwan [native to N Africa and Europe].

Hypochaeris glabra has also been introduced to E and S Africa, S and SW Asia, Australia, Japan, North and South America, and Pacific islands (New Zealand).

The species was first collected in Taiwan in 2007 (M. J. Jung et al., Taiwania 53: 230. 2008). No material has been seen from Taiwan by the present authors. The description is based on the publication by the above authors and material from outside the area.

4. Hypochaeris radicata Linnaeus, Sp. Pl. 2: 811. 1753.

假蒲公英猫儿菊 jia pu gong ying mao er ju

Herbs 15–60 cm tall, perennial, rosulate, with a taproot. Stems few to several, ascending to erect, simple or apically branched, leafless except for few to several bracts. Rosette leaves oblanceolate, (4–)8–15(–30) × 1–3(–7.5) cm, undivided or pinnatifid, base narrowed, margin sinuate-dentate, apex rounded to subacute. Synflorescence sparsely corymbiform, with few to several capitula. Capitula with rather many florets; peduncle long. Involucre cylindric to narrowly campanulate, 1–1.5 × 0.4–0.6 cm at anthesis, to 2 cm in fruit. Phyllaries minutely ciliolate at apex and ± hispid on midrib or glabrous; outer phyllaries lanceolate, bluntly tipped; inner phyllaries linear-lanceolate. Florets bright yellow, much exceeding involucre. Achene brown; body cylindric, 3–7 mm, ribbed, muricate; beak capillaceous, 7–10 mm but outer ones sometimes with a shorter beak. Pappus 0.9–1.3 cm, inner bristles plumose, outer bristles ± scabrid and shorter. Fl and fr. Aug–Oct. 2*n* = 8*.

Meadows, trailsides, around mountain farms; 1700–3300 m. Naturalized in Taiwan and also present in Yunnan (Kunming, ?ephemeral) [native to N Africa and Europe].

Hypochaeris radicata has also been introduced to S and SE Africa, S and SE Asia, Australia, N India, Japan, North and South America, and Pacific islands (New Zealand).

This species was first recorded from Taiwan in 1974 (C. I Peng, Bot. Bull. Acad. Sin. 19: 84. 1978). In Yunnan, it was collected in Kunming in 2009 (*J. W. Zhang 1001*!); its status there is unknown. The description is based essentially on Fl. Taiwan (ed. 2, 4: 991. 1998).

5. Hypochaeris albiflora (Kuntze) Azevêdo-Gonçalves & Matzenbacher, Compositae Newslett. 42: 3. 2005.

白花猫儿菊 bai hua mao er ju

Hypochaeris brasiliensis (Lessing) Bentham & J. D. Hooker ex Grisebach var. *albiflora* Kuntze, Revis. Gen. Pl. 3(3): 159. 1898; *H. microcephala* (Schultz Bipontinus) Cabrera var. *albiflora* (Kuntze) Cabrera.

Herbs 20–50 cm tall, perennial, rosulate, with a taproot. Stem erect, apically sparsely branched, glabrous or sparsely hirsute, leafy. Rosette leaves narrowly elliptic to oblanceolate, 4–10 × 1–5 cm, undivided with sinuate-dentate margin to pinnatisect with entire margin, both surfaces glabrous to sparsely villous, base narrow, apex obtuse to acute; lateral and terminal lobes linear-lanceolate if present. Stem leaves few, smaller, pinnatisect with few lobes or undivided and linear-lanceolate, otherwise similar to rosette leaves. Synflorescence corymbiform, with few to several capitula. Capitula with usually 20–40 florets; peduncle long. Involucre cylindric to narrowly campanulate, 0.8–1.2 × 0.3–0.4 cm at anthesis, 1.5–1.8 cm in fruit. Phyllaries glabrous; outer phyllaries lanceolate; inner phyllaries linear-lanceolate. Florets white, slightly longer than involucre. Achene brown; body fusiform, ca. 4 mm, ribbed and muricate; beak capillaceous, 4–5 mm. Pappus 7–8 mm, all bristles plumose. Fl and fr. Apr–May. 2*n* = 8.

Grassy areas of parks and urban areas, roadsides; near sea level to 200 m. Naturalized in N Taiwan [native to SE South America].

Hypochaeris albiflora has also been introduced to S Africa, E Australia, and SE North America.

This species was first recorded in 2005 and has spread since (M. J. Jung et al., Taiwania 54: 391–398. 2009, as *Hypochaeris microcephala* var. *albiflora*). No material has been seen from Taiwan by the present authors. The description is based on the publication by the above authors and supplemented with material from outside the area.

6. Hypochaeris chillensis (Kunth) Britton, Bull. Torrey Bot. Club 19: 371. 1892.

智利猫儿菊 zhi li mao er ju

Apargia chillensis Kunth in Humboldt et al., Nov. Gen. Sp. 4, ed. f°: 2. 1818; *Achyrophorus brasiliensis* (Lessing) Schultz Bipontinus; *A. chillensis* (Kunth) Schultz Bipontinus; *Hypochaeris brasiliensis* (Lessing) Bentham & J. D. Hooker ex Grisebach; *Porcellites brasiliensis* Lessing.

Herbs 20–50(–?) cm tall, perennial, rosulate, with a taproot. Stem erect, apically sparsely branched, glabrous or hirsute basally, leafy. Rosette leaves narrowly elliptic, lanceolate, or oblanceolate, 5–10(–?) × 1–2(–?) cm, undivided and margin coarsely sinuate-dentate and ciliate or pinnatifid with triangular to lanceolate lobes, abaxially sparsely pubescent on midrib, adaxially glabrous, base narrow, apex acute to acuminate. Stem leaves few, smaller, narrower, undivided, base ± clasping, otherwise similar to rosette leaves. Synflorescence corymbiform, with few to several capitula. Capitula with many (> 50) florets; peduncle long. Involucre cylindric to narrowly campanulate, 0.9–1.2 × 0.4–0.6 cm at anthesis, 1.5–1.8 cm in fruit. Phyllaries hirsute; outer phyllaries lanceolate to linear-lanceolate; inner phyllaries linear-lanceolate. Florets yellow, slightly longer than involucre. Achene brown; body fusiform, 4–5 mm, ribbed and muricate; beak capillaceous, 4–5 mm. Pappus 4–7 mm, all bristles plumose. Fl and fr. Jun–Jul. 2*n* = 8.

Roadsides; 500–600 m. Naturalized in N Taiwan [native to SE South America].

Hypochaeris chillensis has also been introduced to S Africa and SE North America.

This species was first recorded in 2009 (M. J. Jung et al., Taiwania 55: 412–416. 2010). No material has been seen from Taiwan by the present authors. The description is based on the publication by the above authors and supplemented with material from outside the area.

82. PICRIS Linnaeus, Sp. Pl. 2: 792. 1753.

毛连菜属 mao lian cai shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Deckera Schultz Bipontinus; *Hagioseris* Boissier; *Medicusia* Moench; *Spitzelia* Schultz Bipontinus.

Herbs, annual or perennial, rosulate or not, with rigid 2[–4]-hooked or more rarely simple hairs. Stem solitary, usually branched,

rarely stems few, low, and weak. Synflorescence corymbiform but sometimes weakly so. Capitula with usually 20–50 florets. Involucre campanulate to urceolate. Phyllaries ± glabrous or hispid; outer phyllaries in several series, gradually longer centripetally, ± imbricate, mostly 1/2–2/3 as long as inner ones; inner phyllaries ± linear-lanceolate to linear, ± equal in length. Receptacle naked. Florets yellow. Achene ± homomorphic; body fusiform to narrowly ellipsoid, often somewhat curved, with 5 faintly secondarily ribbed main ribs, transversely wrinkled, apically truncate or contracted into a short beak sculptured as body (= cuspis). Pappus white or dirty white, of stiffly fimbriately plumose bristles, often outermost bristles shorter and ± scabrid [in marginal achene sometimes reduced to a minute crownlike structure].

About 50 species: Africa, Asia, Australia, Europe; seven species (four endemic) in China.

Picris has a primary center of diversity including SW Asia and the Mediterranean region and a secondary center in Australia (S. Holzapfel, Willdenowia 24: 97–218. 1994). In C, E, and S Asia the genus is in urgent need of a modern revision, especially with respect to the complex of *P. hieracioides*, which poses particular problems because of it being anthropogenically spread. For the time being, *P. hieracioides* is treated here, in contrast to S. Kitamura (Acta Phytotax. Geobot. 8: 123–127. 1939; Mem. Coll. Sci. Kyoto Imp. Univ., Ser. B, Biol. 22: 90–98. 1955) and, e.g., Fl. Taiwan (ed. 2, 4: 1032. 1998), in a narrow sense, with *P. japonica* as well as the two taxa endemic to Taiwan kept as separate species. This solution has been chosen for the sake of consistency, because including the Taiwan endemics as subspecies in *P. hieracioides* while keeping *P. japonica* separate, as in FRPS (80(1): 54–55. 1997), would imply an unintended taxonomic decision on the relationships of the Taiwan endemics. Moreover, the actual presence of *P. hieracioides* s.s. in E and S Asia and the delimitation between *P. japonica* and *P. hieracioides* need thorough reassessment, and the currently available distributional data are to be taken with caution.

1a. Leaves all basal or subbasal and usually rosulate; plants branched from base, without dominant main stem.
  2a. Involucre 1.5–1.7 cm; stems with yellowish green 2-hooked hairs; achene apex contracted into a cusp of ca. 1 mm ..... 4. *P. ohwiana*
  2b. Involucre ca. 1 cm; stems with white 2-hooked hairs; achene apex truncate ..... 5. *P. divaricata*
1b. Leaves both basally rosulate and on stem; plants usually with a solitary stem, branched mostly higher up.
  3a. Stem especially basally covered with reddish to blackish purplish long mostly simple and few 2-hooked hairs; involucre 1.5–1.7 cm ..... 7. *P. junnanensis*
  3b. Stem covered with mostly 2-hooked hairs; involucre to 1.5 cm.
    4a. Stem covered with dark green or blackish 2-hooked hairs ..... 1. *P. japonica*
    4b. Stem covered with whitish 2-hooked hairs.
      5a. Achene apex truncate ..... 2. *P. hieracioides*
      5b. Achene apex contracted into a 0.3–0.5 mm cusp.
        6a. Lower leaves linear-lanceolate, 0.5–0.8(–1.1) cm wide ..... 3. *P. morrisonensis*
        6b. Lower leaves narrowly oblong-elliptic to lanceolate, 1.5–2 cm wide ..... 6. *P. nuristanica*

1. Picris japonica Thunberg in Murray, Syst. Veg., ed. 14, 711. 1784.

日本毛连菜 ri ben mao lian cai

Aster esquirolii H. Léveillé; *Picris davurica* Fischer ex Hornemann; *P. davurica* var. *koreana* (Kitamura) Kitagawa ex Kitamura; *P. hieracioides* Linnaeus subsp. *japonica* (Thunberg) Krylov; *P. hieracioides* subsp. *koreana* (Kitamura) Voroschilov; *P. japonica* var. *koreana* Kitamura; *P. koreana* (Kitamura) Voroschilov; *P. mairei* H. Léveillé.

Herbs 30–120 cm tall, short-lived perennial, with a taproot. Stem erect, branched mostly apically, hirsute with dark green to blackish rigid 2-hooked hairs, leafy. Basal leaves (withered at anthesis) and lower stem leaves oblanceolate, elliptic-lanceolate, or elliptic-oblanceolate, 12–20 × 1–3 cm, both surfaces with rigid 2-hooked hairs, basally attenuate into a petiole-like portion, margin sharply dentate to sinuate-dentate, apex acute to acuminate. Middle stem leaves sessile, lanceolate, base semiamplexicaul, smaller but otherwise like lower stem leaves. Upper stem leaves linear-lanceolate. Synflorescence corymbiform to paniculately corymbiform, with many capitula. Peduncle slender, hirsute like stem and branches. Involucre cylindric-campanulate to ovoid, 1–1.2 cm. Phyllaries green to blackish green, abaxially darkish to dark hirsute with 2-hooked hairs mainly along midrib, apex acute to acuminate; outer and inner phyllaries linear-lanceolate. Florets yellow. Achene reddish brown, fusiform, 3–5 mm, apex truncate. Pappus ca. 7 mm, caducous. $2n = 10$*.

Grasslands on mountain slopes, forests, open places in forests, waste places in forests, by fields, river margins, alpine meadows; 600–3700 m. Anhui, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang [Japan, Kazakhstan, Mongolia, E Russia].

According to V. N. Vassiljev (Fl. URSS 29: 221–222. 1964), *Picris japonica* can, moreover, be distinguished from *P. hieracioides* by the ligule of the corolla being less than 2 × as long as the tube, whereas it is 2–3 × as long as the tube in the latter species.

2. Picris hieracioides Linnaeus, Sp. Pl. 2: 792. 1753.

毛连菜 mao lian cai

Hedypnois hieracioides (Linnaeus) Hudson; *Picris hieracioides* subsp. *tsekouensis* Kitamura.

Herbs 16–120 cm tall, annual or short-lived perennial. Taproot stout. Stem erect, branched especially in apical third, hirsute with spreading rigid 2-hooked hairs, leafy. Basal leaves (withered before flowering) and lower stem leaves narrowly elliptic to broadly lanceolate, 8–20 × 2–4 cm, adaxially and especially on veins with spreading rigid 2-hooked hairs, base attenuate into a winged petiole-like portion, margin entire to coarsely and sharply dentate, apex acuminate, acute, or obtuse. Middle and upper stem leaves sessile, lanceolate to linear,

smaller, base semiamplexicaul to clasping, margin less dentate or entire, otherwise similar to lower stem leaves. Synflorescence corymbiform to corymbosely paniculiform, with some to many capitula. Peduncle slender. Involucre cylindric-campanulate to ovoid, 0.9–1.2 cm. Phyllaries abaxially with whitish rigid 2-hooked hairs along midrib; outer and inner phyllaries ± linear-lanceolate, apex acute to acuminate. Florets yellow. Achene brown, fusiform, 3–5 mm, apex truncate. Pappus 5–6 mm, caducous. Fl. and fr. Jun–Oct. 2*n* = 10.

Grasslands, mountain slopes, forests, along ditches, fields, wastelands, sandy soils; 200–3600 m. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Yunnan [Bhutan, N India, Kashmir, Kazakhstan, W Russia, Vietnam; SW Asia, Europe, Mediterranean region].

Picris hieracioides has also been introduced to SE Africa and North America.

Delimitation between *Picris hieracioides*, *P. japonica*, and other Asian species of the genus needs urgent revision, even with respect to the actual presence of this species in China; see also note to the genus, above. Hence, the above data are to be taken with caution. See also the note under *P. japonica*. Presence in China and the status of *P. hieracioides* subsp. *kaimaensis* Kitamura, said to occur in the Himalaya as well as in NE Asia (Korea, Mongolia), need evaluation in the context of a revision of the *P. hieracioides* complex in E Asia.

3. Picris morrisonensis Hayata, Icon. Pl. Formosan. 8: 72. 1919.

台湾毛连菜 tai wan mao lian cai

Picris hieracioides Linnaeus subsp. *morrisonensis* (Hayata) Kitamura.

Herbs 20–70 cm tall, perennial, erect, with a taproot. Stem mostly solitary, erect, branched especially apically, hirsute with spreading rigid 2-hooked hairs, leafy. Basal and lower stem leaves narrowly elliptic to narrowly lanceolate, 6–16 × 0.5–0.8(–1.1) cm, hirsute with spreading rigid 2-hooked hairs, base attenuate, margin coarsely to shallowly sinuate-dentate, apex acuminate. Middle and upper stem leaves smaller than lower and basal stem leaves, otherwise similar, narrowly lanceolate to linear-lanceolate, base truncate, apex obtuse to acuminate. Synflorescence loosely corymbiform, with several to many capitula. Peduncle usually 3–7 cm, slender, hirsute as stem and branches. Involucre cylindric-campanulate to ovoid, 0.9–1.2 cm. Phyllaries with spreading rigid 2-hooked hairs along midrib, apex acute to acuminate; outer and inner phyllaries linear-lanceolate. Florets yellow. Achene reddish brown, fusiform, 4–5 mm, apex contracted into a ca. 0.5 mm cusp. Pappus 5–7 mm. Apr–Nov. 2*n* = 10*.

● Mountain meadows, open sites in mountains; 1400–3500 m. Taiwan.

4. Picris ohwiana Kitamura, Acta Phytotax. Geobot. 3: 136. 1934.

黄毛毛连菜 huang mao mao lian cai

Picris hieracioides Linnaeus subsp. *ohwiana* (Kitamura) Kitamura.

Herbs 7–20 cm tall, perennial, rosulate, with a taproot. Stem divaricately branched from base, hirsute with yellowish green rigid 2-hooked hairs, leafless to sparsely leafy. Rosette leaves lanceolate to oblanceolate, 3–9 × 0.5–2 cm, both surfaces hirsute, basally attenuate into a winged petiole-like portion, margin irregularly sinuate-dentate, apex obtuse to acute. Stem leaves similar to rosette leaves but somewhat smaller and basally truncate; upper stem leaves reduced to linear-lanceolate bracts. Synflorescence loosely corymbiform, with few to several capitula. Peduncle usually 3–6 cm, slender, hirsute as stem and branches. Involucre cylindric-campanulate to ovoid, 1.5–1.7 cm. Phyllaries abaxially with yellowish green rigid 2-hooked hairs along midrib; outer phyllaries blackish green, linear-lanceolate, unequal, apex acute to acuminate; inner phyllaries green, linear-lanceolate, apex acute to acuminate. Florets yellow. Achene reddish brown, fusiform, 5–6 mm, apex contracted into a ca. 0.5 mm cusp. Pappus 7–8 mm, caducous. Apr–Sep. 2*n* = 10*.

● Subalpine open stony or rocky places; above 3400 m. Taiwan (Daguan Shan, Nanhu Dashan).

5. Picris divaricata Vaniot, Bull. Acad. Int. Géogr. Bot. 12: 28. 1903.

滇苦菜 dian ku cai

Hypochaeris mairei H. Léveillé.

Herbs 10–40 cm tall, short-lived perennial. Stems few to several, weak, erect, divaricately branched from base, with whitish rigid small 2-hooked hairs, glabrescent or glabrous toward apex. Basal leaves oblanceolate-elliptic, narrowly elliptic, or linear-elliptic, 3–10 × 0.5–2 cm, with short rigid simple and hooked rigid hairs especially on midvein, basally attenuate into a winged petiole-like portion, base cuneate-attenuate, margin sinuate-dentate or entire, apex acute, obtuse, or rounded. Stem leaves few, subbasal, sessile, broadly linear to narrowly elliptic-oblanceolate, small, with sparse simple rigid hairs especially on abaxial midvein, base semiamplexicaul, otherwise like basal leaves. Capitula 1 or 2 per stem. Involucre cylindric to narrowly campanulate, 9–10 mm. Phyllaries arachnoid hairy and with sparse rigid hooked hairs on midvein; outer phyllaries narrowly triangular to lanceolate, apex acute; inner phyllaries linear-lanceolate, apex acute. Florets yellow. Achene reddish brown, narrowly ellipsoid, 4–5 mm, apex contracted into a tiny cuspis. Pappus 6–7 mm. Fl. and fr. Apr–Nov.

● Grasslands on mountain slopes, forest margins, thickets; 1400–3200 m. Xizang, Yunnan.

6. Picris nuristanica Bornmüller, Repert. Spec. Nov. Regni Veg. Beih. 108: 68. 1938.

新疆毛连菜 xin jiang mao lian cai

Picris afghanica K. H. Rechinger & Köie; *P. hieracioides* Linnaeus var. *indica* Candolle; *P. hieracioides* subsp. *nuristanica* (Bornmüller) Kitamura; *P. nuristanica* var. *indica* (Candolle) Tzvelev; *P. similis* V. N. Vassiljev.

Herbs (10–)30–100 cm tall, annual or short-lived perennial. Stem erect, branched especially in apical portion, leafy; branches spreading-erect, ± densely covered with whitish 2-hooked hairs. Basal leaves narrowly oblong-elliptic to lanceolate, 8–12 × 1.5–2 cm, both surfaces with whitish rigid 2-hooked hairs, basally attenuate into a winged petiole-like portion, margin entire or sinuate-dentate, apex acuminate. Lower

stem leaves sessile, otherwise similar to basal leaves; middle and upper stem leaves linear-lanceolate, margin ± entire. Synflorescence sparsely corymbiform, with few to some capitula. Involucre cylindric to narrowly campanulate, 1–1.5 cm. Phyllaries dark green, arachnoid hairy and with whitish rigid 2-hooked hairs; outer phyllaries small; inner phyllaries linear-lanceolate, margin membranous. Florets yellow. Achene fusiform, 5–6(–7) mm, apex contracted into a ca. 0.3 mm cuspis. Pappus ca. 6 mm, caducous. Fl. and fr. Jun–Sep. 2*n* = 10.

Rocky mountain slopes, sandy areas on floodplains; 1600–1700 m. Xinjiang [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan].

7. Picris junnanensis V. N. Vassiljev, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 17: 457. 1955.

云南毛连菜 yun nan mao lian cai

Picris hieracioides Linnaeus subsp. *fuscipilosa* Handel-Mazzetti.

Herbs 30–60(or more?) cm tall, annual or biennial. Stem erect, branched apically, densely covered with reddish to blackish purplish long rigid mostly simple partly 2-hooked hairs, leafy. Basal and lower stem leaves few, linear-lanceolate to linear, abaxially with simple rigid hairs, basally attenuate, margin sparsely dentate to sinuate-dentate. Middle and upper stem leaves similar to basal and lower stem leaves but smaller, lanceolate, basally truncate, wider, and clasping. Synflorescence sparsely corymbiform, with few to some capitula. Peduncle slender with dark long rigid simple hairs. Involucre 1.5–1.7 cm. Phyllaries blackish green, with dark long simple hairs, margin cartilaginous; outer phyllaries linear to linear-lanceolate; inner phyllaries linear-lanceolate. Florets yellow. Achene fusiform, 4–5 mm, apex truncate. Pappus ca. 5 mm. Fl. and fr. Jun–Sep.

● Grasslands, mountain slopes, forests; 2900–3500 m. Xizang, Yunnan.

83. CICHORIUM Linnaeus, Sp. Pl. 2: 813. 1753.

菊苣属 ju ju shu

Shi Zhu (石铸 Shih Chu); Norbert Kilian

Acanthophyton Lessing.

Herbs, perennial, [biennial or annual]. Stem usually solitary, branched in lower half. Involucre cylindric, hardened in fruit. Phyllaries in several series; outer phyllaries centripetally longer, imbricate; inner phyllaries in one row, equal in length. Receptacle naked. Florets bright blue. Achene subcylindric to obovoid, ± 3–5-angular, apex truncate. Pappus white, a tiny crown of fimbriate scales.

About seven species: N Africa, SW Asia, S Europe; one species (introduced) in China.

Two species, *Cichorium endivia* Linnaeus and *C. intybus*, are widely cultivated as a leafy vegetable in China; the latter is also widespread in China as a ruderal weed and in other temperate and semiarid regions of the world.

1. Cichorium intybus Linnaeus, Sp. Pl. 2: 813. 1753.

菊苣 ju ju

Herbs 40–110 cm tall, perennial, with a strong taproot. Stem usually solitary, erect; branches spreading-ascending, subglabrous. Basal leaves rosulate, obovate to oblanceolate, 15–34 × 2–4 cm, attenuate into a petiole-like basal portion, undivided to usually runcinately pinnatipartite, sparsely covered with long multicellular hairs, base attenuate, margin dentate; lateral lobes 3–6 pairs, triangular; terminal lobe distinctly larger than lateral ones, apex rounded to acute. Stem leaves similar to basal leaves but smaller and less divided, gradually reduced toward stem apex, base clasping, apex acute. Synflorescence of main axis and larger branches spiciform-paniculiform. Capitula axillary and terminal, solitary or in clusters of a few, sessile or on a several cm long, thick, and apically slightly inflated peduncle, with usually 15–20 florets. Involucre cylindric, 0.9–1.4 cm. Phyllaries abaxially sparsely with glandular or simple hairs, apex ± acute; outer phyllaries lanceolate, longest > 1/2 as long as to approaching inner ones in length, spreading-erect, margin ciliate; inner phyllaries linear-lanceolate. Florets blue or exceptionally pink or bluish white. Achene brown, subcylindric to obovoid, 2–3 mm, stout, rugulose, apex truncate. Pappus (0.1–)0.2–0.3 mm. Fl. May–Oct. 2*n* = 18.

By rivers, wastelands along seashores, slopes, by ditches; low elevations. ?Gansu, Hebei, Heilongjiang, Henan, ?Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Taiwan, Xinjiang [N Africa, C and SW Asia, Europe].

Escaped as a ruderal weed in many parts of the world, this species was formerly cultivated as a medicinal plant but more recently is grown as an ornamental and coffee substitute.

A second species, *Cichorium pumilum* Jacquin (as *C. glandulosum* Boissier & A. Huet) was reported for Xinjiang (Y. P. Gu & Y. S. Chen, Fl. Tsinling. 1(5): 391. 1985; C. H. An, Fl. Xinjiang. 5: 386. 1999). The presence of this Mediterranean–SW Asian species is highly unlikely, and, as also concluded by Tzvelev (Rast. Tsentral. Azii 14b: 14. 2008), the description (“pappus scales ca. 0.1 mm”) refers to populations within the range of variation of *C. intybus* (including *C. glaucum* Hoffmannsegg & Link; see also A. M. Kiers, Gorteria, Suppl. 5. 2000).

84. HIERACIUM Linnaeus, Sp. Pl. 2: 799. 1753.

山柳菊属 shan liu ju shu

Shi Zhu (石铸 Shih Chu); Günter Gottschlich

Herbs, perennial. Stem solitary to few fascicled, branched or unbranched. Leaves petiolate or sessile, margin entire, deeply

toothed, or rarely lobed. Basal leaves rosulate, withered at anthesis, or absent. Stem leaves few to numerous [or 1 or reduced and bractlike or absent]. Synflorescence corymbiform, paniculiform, racemiform, or pseudocymiform, sometimes capitulum solitary. Capitula with numerous florets. Involucre campanulate, or basally turbinate, (0.8–)0.9–1.2[–2] cm. Phyllaries in several irregularly or regularly imbricate rows, linear-lanceolate. Florets yellow [or rarely white]. Achene cylindric, ellipsoid, or narrowly obconic, 2.5–5 mm, with 8–10[–14] equal ribs apically confluent in an obscure ring, apex truncate. Pappus white, dirty white, dirty yellow, or pale yellowish brown, of scabrid bristles.

About 800 species (broad species concept) with over 5,000 apomictic taxa (described as microspecies or subspecies): N Africa, Asia, Europe, North and South America; six species (one endemic) in China.

Hieracium hololeion has been shown by molecular phylogenetic analyses (see N. Kilian et al. in V. A. Funk et al., Syst. Evol. Biogeogr. Compositae, 352–353. 2009) to be a member of subtribe Crepidinae (see there under *Hololeion*). Also *Hieracium coreanum*, as was first stated by H. S. Pak (Fl. Coreana 7: 378. 1999) and Sennikov and I. D. Illarionova (Bot. Zhurn. 86(3): 37–59. 2001), is actually a member of subtribe Crepidinae, belonging to *Crepis*.

1a. Basal and lower stem leaves absent at anthesis.
  2a. Middle stem leaves lanceolate to narrowly linear, 0.5–2 cm wide, base cuneate ..... 1. *H. umbellatum*
  2b. Middle stem leaves mainly ovate, 1.5–5 cm wide, base rounded or cordate and amplexicaul.
    3a. Base of stem leaves cordate and amplexicaul; leaves often with rigid simple hairs on margin ..... 2. *H. virosum*
    3b. Base of stem leaves rounded; leaves glabrous or with few rigid simple hairs on margin ..... 3. *H. robustum*
1b. Basal leaves withered at anthesis or present in fruit.
  4a. Basal leaves withered at anthesis; phyllaries abaxially with capitate stipitate glandular hairs ..... 6. *H. regelianum*
  4b. Basal leaves present in fruit; phyllaries abaxially without or with capitate stipitate glandular hairs.
    5a. Phyllaries abaxially with sparse stellate hairs to 0.3 mm and with moderate simple hairs ..... 4. *H. korshinskyi*
    5b. Phyllaries abaxially with dense capitate stipitate glandular hairs to 1 mm but simple hairs lacking ..... 5. *H. morii*

1. Hieracium umbellatum Linnaeus, Sp. Pl. 2: 804. 1753.

山柳菊 shan liu ju

Hieracium coronopifolium Bernhardi ex Hornemann; *H. sinense* Vaniot; *H. umbellatum* subsp. *coronopifolium* (Bernhardi ex Hornemann) Fries; *H. umbellatum* var. *coronopifolium* (Bernhardi ex Hornemann) Komarov; *H. umbellatum* var. *mongolicum* Fries; *H. umbellatum* f. *scabrum* Komarov.

Herbs, perennial, 30–100 cm tall. Stem solitary to few fascicled, basally pale purple, branched apically, glabrous, scabrid, or very sparsely and minutely echinulate and with white minutely stellate hairs, rarely with long simple hairs, under capitula with minute stellate and somewhat rigid short simple hairs. Basal and lower stem leaves absent at anthesis. Middle and upper stem leaves sessile, lanceolate, 3–10 × 0.4–2 cm, glabrous or abaxially hispidulous on veins and adaxially with sparse arachnoid hairs, base narrowly cuneate, margin entire, subentire, or with sparse and sharp teeth, apex acute to shortly acuminate. Upper stem leaves similar to middle stem leaves but gradually smaller. Synflorescence corymbiform to corymbosely paniculiform, with few to numerous capitula or rarely with solitary capitulum. Involucre dark green, campanulate, ca. 1.5 cm in diam. Phyllaries in several [to many] rows, abaxially rarely with capitate stipitate glandular hairs on midvein, abaxially glabrous, base sometimes with minute stellate hairs, apex acute; outermost and outer phyllaries lanceolate, 3.5–4.5 × 0.8–1.2 mm; innermost phyllaries ± linear-lanceolate, 8–10 × ca. 1 mm. Florets yellow. Achene dark purple, cylindric, ca. 3 mm, with 10 ribs. Pappus pale yellow, ca. 6 mm. Fl. and fr. Jul–Sep. $2n$ = 18, 27.

Forest margins, forests, dense grassy areas, sandy soils on floodplains, clear-cuttings; (200–)1000–3000(–3300) m. Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [India, Japan, Kazakhstan, Mongolia, Pakistan, Russia, Uzbekistan; SW Asia, Europe, North America].

2. Hieracium virosum Pallas, Reise Russ. Reich. 1: 501. 1771.

粗毛山柳菊 cu mao shan liu ju

Hieracium prostratum Candolle; *H. sabaudum* Pallas.

Herbs, perennial, 40–80[–120] cm tall, with thick rhizomes. Stem solitary to few fascicled, basally purple, stout, erect, glabrous or basally with sparse to moderate simple hairs, apically branched. Stem leaves (10–)25–40[–80], basal and lower stem leaves absent at anthesis. Middle stem leaves sessile, ovate, ovate-lanceolate, narrowly elliptic-lanceolate, or narrowly elliptic, 5–8 × 1.5–5 cm, glaucescent, abaxially pale green and distinctly reticulately veined, margin or only abaxial veins with dense to sparse ± setose simple hairs, base cordate and amplexicaul, margin entire or with sparse and sharp teeth, apex acute to shortly acuminate. Upper stem leaves similar to middle stem leaves but gradually smaller. Synflorescence shortly corymbiform to long paniculiform, with (10–)15–50(–80) capitula. Peduncle glabrous. Involucre campanulate or basally turbinate, 0.9–1.1 cm. Phyllaries in few rows, green or dark green, abaxially glabrous, apex obtuse to acute; outer phyllaries lanceolate, linear, or broadly linear, ca. 3 × 1 mm, often recurved; middle phyllaries lanceolate, 4.5–8 × ca. 1.5 mm; inner phyllaries lanceolate, ca. 1.1 cm × 1 mm. Florets yellow. Achene blackish brown, cylindric, ca. 3 mm, with 10 ribs. Pappus pale yellow, ca. 6 mm. Fl. and fr. Jun–Oct. $2n$ = 27, 36.

Grasslands, forests, thickets; 1700–2100 m. Xinjiang [India, Japan, Kazakhstan, Mongolia, Russia, Uzbekistan; SW Asia, SE Europe].

3. Hieracium robustum Fries, Nova Acta Regiae Soc. Sci. Upsal. 14: 193. 1848.

新疆山柳菊 xin jiang shan liu ju

Herbs, perennial, 40–80[–120] cm tall, with thick rhizomes. Stem solitary to few fascicled, basally purple, stout,

erect, branched apically, glabrous or basally with sparse to moderate simple hairs, apically and under capitula with sparse to moderate stellate hairs. Stem leaves (10–)25–50[–80], basal and lower stem leaves absent at anthesis. Middle stem leaves sessile, ovate-lanceolate to narrowly elliptic-lanceolate, 5–9 × 1.5–3 cm, subglaucescent, abaxially pale green and reticulately veined, margin or only abaxial veins with moderate to sparse simple hairs and sparse to moderate stellate hairs, base cordate to rounded, margin entire to deeply dentate, apex acute to shortly acuminate. Upper stem leaves similar to middle stem leaves but gradually smaller. Synflorescence corymbiform to long paniculiform, with (10–)15–50(–80) capitula. Involucre campanulate, (0.9–)1–1.2 cm. Phyllaries in few rows, green or dark green, abaxially with moderate stellate hairs, apex obtuse to acute; outer phyllaries lanceolate, linear, or broadly linear, 2–3 × ca. 1 mm; middle phyllaries lanceolate, 4–7 × ca. 1 mm; inner phyllaries lanceolate, 0.8–1.2 cm × ca. 1 mm. Florets yellow. Achene blackish brown, cylindric, ca. 3 mm, with 10 ribs. Pappus pale yellow, ca. 6 mm. Fl. and fr. Jun–Oct. 2*n* = 27, 36.

Grasslands, slopes; ?1700–2100 m. Xinjiang [India, Kazakhstan, Russia; SW Asia, SE Europe].

4. Hieracium korshinskyi Zahn in Engler, Pflanzenr. 76(IV. 280): 528. 1921.

高山柳菊 gao shan liu ju

Crepis shawanensis C. Shih.

Herbs, perennial, 30–60 cm tall, with long rhizomes. Stem purplish red, erect, branched apically or rarely unbranched, basally densely villous, apically with arachnoid and minutely stellate hairs, under capitula with long simple hairs mixed with capitate stipitate glandular hairs and minutely stellate hairs. Basal leaves present at anthesis; petiole winged; leaf blade elliptic to lanceolate, 6–16 × 1–6 cm, sparsely villous, base cuneate-attenuate, margin with sparse sharp teeth, entire, or subentire, apex acute to obtuse. Stem leaves few, similar to basal leaves. Lower stem leaves shortly petiolate or sessile; leaf blade basally cuneate-attenuate, subamplexicaul, or amplexicaul. Synflorescence corymbiform, with (1 or)2 to several capitula. Involucre campanulate, ca. 6 mm in diam. Phyllaries in 3 rows, dark green, abaxially with sparse simple hairs and few minute stellate hairs; outer phyllaries linear-lanceolate to broadly linear, ca. 3.5 × 0.5 mm, apex acute; inner phyllaries linear-lanceolate, ca. 9 × 1.2 mm, apex acute to obtuse. Florets yellow. Achene purple to purplish black, cylindric, ca. 3.2 mm, with 10 ribs. Pappus dirty white, pale yellow, or brownish, ca. 6 mm. Fl. and fr. Jul–Sep. 2*n* = 18, 27.

Forests, open places in forests; 1600–2200 m. Xinjiang [Kazakhstan, Mongolia, SC Russia].

5. Hieracium morii Hayata, Icon. Pl. Formosan. 8: 80. 1919.

腺毛山柳菊 xian mao shan liu ju

Hieracium morii var. *tsugitakaense* Mori; *H. pinanense* Kitamura.

Herbs, perennial, 10–35 cm tall. Stem simple or branched, erect, moderately to densely microglandular, basally densely pilose, upward moderately pilose. Basal leaves spatulate, 5–13 × 1–2 cm, pilose and microglandular, base narrowly attenuate into a winged petiole, margin mucronulately serrate, apex obtuse and mucronulate. Stem leaves 8–15, gradually smaller toward stem apex, up to densely microglandular. Synflorescence racemiform, with 1–16 capitula. Involucre obconic-campanulate, 1.2–1.5 × 0.6–0.9 cm. Phyllaries in 2 or 3 rows; outer phyllaries abaxially densely covered with dark hispid glandular capitate hairs to 1 mm; inner phyllaries linear, ca. 8 mm, abaxially glabrous. Achene cylindric, ca. 2.5 × 0.8 mm, with conspicuous ribs. Pappus brownish, 3.5–5 mm.

● Alpine meadows. Taiwan.

The present authors have not seen the type nor any reliable material of this species, and the above description is taken from the original publication and from the treatment in Fl. Taiwan (ed. 2, 4: 990. 1998).

6. Hieracium regelianum Zahn in Engler, Pflanzenr. 79(IV. 280): 936. 1922.

卵叶山柳菊 luan ye shan liu ju

Herbs, perennial, 30–100 cm tall, with short and thick rhizomes. Stem solitary to few fascicled, erect, branched apically, basally brown long hirsute and apically under capitulum glabrous or with capitate stipitate glandular hairs mixed with stellate hairs or sometimes mixed with simple hairs, glabrescent. Basal and lower stem leaves withered in fruit. Middle stem leaves sessile, ovate, ovate-lanceolate, elliptic-lanceolate, or narrowly elliptic, 4–9 × 1–3 cm, abaxially sparsely hirsute on veins, adaxially glabrous, base auriculate and semiamplexicaul, margin entire or minutely toothed and sparsely ciliate, apex acuminate. Upper stem leaves similar to middle stem leaves but gradually smaller. Synflorescence sparsely corymbosely paniculiform, with capitula moderate in number. Involucre campanulate, ca. 1 cm. Phyllaries in 3 rows, dark green to ± dark green, abaxially usually with simple hairs on midvein intermixed with capitate stipitate glandular hairs and stellate hairs; outer phyllaries linear-lanceolate, ca. 2 × 0.7 mm, apex acute to obtuse; middle phyllaries linear-lanceolate, ca. 4 × 1 mm, apex acute to obtuse; inner phyllaries broadly linear, ca. 1.1 cm × 1.2 mm, apex obtuse. Florets yellow. Achene dark brown, cylindric, ca. 4 mm, with 8–10 ribs, basally attenuate. Pappus dirty white, ca. 6 mm. Fl. and fr. Jul–Sep.

Open places in forests; 1700–2000 m. Xinjiang [Kazakhstan].

85. PILOSELLA Hill, Brit. Herb. 441. 1756.

细毛菊属 xi mao ju shu

Shi Zhu (石铸 Shih Chu); Günter Gottschlich

Herbs, perennial, rosulate. Stem solitary to few fascicled, branched or unbranched. Rosette leaves sessile, rarely withered at anthesis, margin entire or rarely denticulate; stem leaves [absent or] few or [rarely] numerous. Synflorescence corymbiform [or pseudocymiform, sometimes capitulum solitary]. Capitula with numerous florets. Involucre ovoid to hemispheric, [4–]6–10[–14] mm.

Phyllaries in several irregular rows, linear-lanceolate or rarely ovate-lanceolate. Florets yellow [rarely pale yellow or orangish red], sometimes outer ones red striped. Achene cylindric, ellipsoid, or narrowly obconic, 1–2[–2.5] mm, with [8–]10[–14] equal apically distinct ribs not confluent in an obscure ring, apex truncate. Pappus white or dirty white, of scabrid bristles.

About 110 species (broad species concept) with ca. 700 apomictic or hybrid taxa: N Africa, Asia, Europe; two species in China.

1a. Stem with spreading bristles; involucre [9–]10–11 mm ..... 1. *P. procera*
1b. Stem with appressed or upward-curved bristles; involucre 6–9 mm ..... 2. *P. echioides*

1. Pilosella procera (Fries) F. W. Schultz & Schultz Bipontinus, Flora 45: 431. 1862.

棕毛细毛菊 zong mao xi mao ju

Hieracium procerum Fries, Symb. Hieracium, 43: 1848; *H. persicum* Boissier.

Herbs, perennial, 20–60 cm tall, rhizomatous. Stem solitary to few fascicled, erect, branched apically, basally densely covered with light brown spreading bristles, apically bristles gradually sparser and intermixed with stellate hairs and capitula becoming white or yellowish pubescent, without capitate stipitate glandular hairs. Leaves with light brown dense bristles and small stellate hairs. Basal leaves withered at anthesis. Stem leaves sessile, narrowly elliptic to lanceolate, 3–10 × 0.2–1.2 cm, apex acuminate. Upper stem leaves lanceolate. Synflorescence corymbiform, with many capitula. Involucre hemispheric, ca. [0.9–]1[–1.1] cm. Phyllaries in 3 or 4 rows, densely covered with stellate hairs and sparsely with long rigid and capitate stipitate glandular hairs; outer phyllaries lanceolate, 3–4 mm, apex acute to subobtuse; inner phyllaries narrowly elliptic-lanceolate, 7–9 mm, apex acute to obtuse. Florets yellow. Achene dark brown, cylindric, ca. 2.2 mm, with 10 ribs. Pappus dirty white, ca. 7 mm. Fl. and fr. Jul–Aug. 2*n* = 36.

Dry mountain slopes; 1200–2500 m. Xinjiang [Kazakhstan, Uzbekistan; SW Asia].

2. Pilosella echioides (Lumnitzer) F. W. Schultz & Schultz Bipontinus, Flora 45: 431. 1862.

刚毛细毛菊 gang mao xi mao ju

Hieracium echioides Lumnitzer, Fl. Poson. 348. 1791; *H. echioides* subsp. *asiaticum* Nägeli & Peter; *Pilosella asiatica* (Nägeli & Peter) Schljakov.

Herbs, perennial, 25–100 cm tall, with short rhizomes. Stem solitary to few fascicled, erect, branched apically, basally densely covered with appressed or upward-curved brown long bristles, apically bristles sparser and stellate hairs dense, under capitulum densely white pubescent. Basal leaves withered at anthesis. Lower stem leaves shortly petiolate; leaf blade lanceolate, linear-lanceolate, or narrowly elliptic-lanceolate, 4–16 × 0.5–2 cm, densely hirsute and stellate, base attenuate, apex acute to obtuse. Upper stem leaves sessile, lanceolate, gradually smaller, densely hirsute and stellate. Synflorescence corymbiform, with few to many capitula. Involucre ovoid to hemispheric, 6–9 mm. Phyllaries in 3 rows, brownish gray, abaxially densely pubescent and with or without sparse capitate stipitate glandular hairs; outer phyllaries ovate-lanceolate, 3–5 mm, apex acuminate; inner phyllaries narrowly elliptic-lanceolate, apex acuminate. Florets yellow. Achene brown, narrowly cylindric, ca. 2.2 mm, with 10 ribs. Pappus dirty white, 4–5 mm. Fl. and fr. Jun–Sep. 2*n* = 18, 27, 36.

Desert steppes, dry valleys; ca. 2000 m. Xinjiang [Kazakhstan; C and E Europe].