
New Species of *Corydalis* (Fumariaceae) from China II

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ABSTRACT. Twenty-three species and one subspecies of *Corydalis* DC. (Fumariaceae) from China and Tibet are described as new to science: *C. aeditua* Lidén & Z. Y. Su, *C. cheilosticta* Z. Y. Su & Lidén, *C. cryptogama* Z. Y. Su & Lidén, *C. dolichocentra* Z. Y. Su & Lidén, *C. gymnopoda* Z. Y. Su & Lidén, *C. heterothylax* C. Y. Wu ex Z. Y. Su & Lidén, *C. ischnosiphon* Lidén & Z. Y. Su, *C. jiulongensis* Z. Y. Su & Lidén, *C. lagochila* Lidén & Z. Y. Su, *C. longistyla* Z. Y. Su & Lidén, *C. lophophora* Lidén & Z. Y. Su, *C. madida* Lidén & Z. Y. Su, *C. mediterranea* Z. Y. Su & Lidén, *C. milarepa* Lidén & Z. Y. Su, *C. nematopoda* Lidén & Z. Y. Su, *C. nubicola* Z. Y. Su & Lidén, *C. papillosa* Z. Y. Su & Lidén, *C. procera* Lidén & Z. Y. Su, *C. sarcolepis* Lidén & Z. Y. Su, *C. sophronitis* Z. Y. Su & Lidén, *C. tenuipes* Lidén & Z. Y. Su, *C. virginica* Lidén & Z. Y. Su, *C. yaoi* Lidén & Z. Y. Su, and *C. cheilosticta* subsp. *borealis* Lidén & Z. Y. Su. Six previously recognized subspecific taxa are raised to specific rank, and three of these are provided with new names: *C. microflora* (H. Chuang) Z. Y. Su & Lidén, stat. nov. [= *C. flexuosa* var. *microflora* H. Chuang], *C. mucronipetala* (H. Chuang) Lidén & Z. Y. Su, stat. nov. [= *C. flexuosa* var. *mucronipetala* H. Chuang], *C. omeiana* (C. Y. Wu & H. Chuang) Z. Y. Su & Lidén, stat. nov. [= *C. flexuosa* var. *omeiana* C. Y. Wu & H. Chuang], *C. amplisejala* Z. Y. Su & Lidén, nom. et stat. nov. [= *C. pseudomucronata* var. *cristata* C. Y. Wu], *C. harry-smithii* Lidén & Z. Y. Su, nom. et stat. nov. [= *C. elata* subsp. *ecristata* C. Y. Wu], and *C. pseudomairei* C. Y. Wu ex Z. Y. Su & Lidén, nom. et stat. nov. [= *C. mairei* var. *megalantha* C. Y. Wu].

Key words: China, *Corydalis*, Fumariaceae, IUCN Red List.

During the past couple of decades, many new Chinese species of *Corydalis* DC. (Fumariaceae) have come to light, some based on recently collected material and others on material that was previously unnoticed in herbaria in China and abroad. Several of these species were described by Wu Cheng-Yih, Zhuang Xuan, and ourselves during the preparatory

work for *Flora Republicae Popularis Sinicae*, Volume 32, but others have not yet been formally recognized. Several more species need to be described, and we believe that additional undiscovered species exist. We have personal field experience for seven of the species described here, and for another four we have had access to field photographs, but most descriptions are based solely on herbarium specimens.

The style of the descriptions is similar to that of "New species of *Corydalis* from China I" (Su & Lidén, 1997). The sequence of subgenera, sections, and series is systematic, following that of the *Flora of China*, but in each subgeneric taxon the species are treated alphabetically. Phenology and distribution are summarized in separate paragraphs when more than one collection are known for a species.

IUCN Red List categories cannot be assigned to most taxa, due to data deficiency. However, it is preliminarily concluded that *Corydalis madida* Lidén & Z. Y. Su and *C. aeditua* Lidén & Z. Y. Su are vulnerable, due to their existence as very small populations in extreme habitats (in seepage water on steep cliffs), and probably also *C. virginica* Lidén & Z. Y. Su, due to heavy exploitation pressure of the area.

SECTION *STRICTAE* (FEDDE) WENDELBO

1. *Corydalis longistyla* Z. Y. Su & Lidén, sp. nov.

TYPE: China, Sichuan: Dege, 3600 m, 22 June 1974, *Sich. coll. 7074* (holotype, CDBI; isotype, PE).

Herba perennis glauca glabra; caulis foliatus ramosus, foliis ovatis sub-bipinnatisectis, foliolis integris vel plus minusve profunde divisis, lobis obovatis vel subflabellatis. Racemi 15–40-flori, in statu fructifero elongati; bracteae anguste lanceolatae, pedicellis (4–9 mm longis) breviores usque aequantes. Flores lutei, apice distincte apiculati, calcaribus brevibus obtusis. Capsula oligosperma stylo longo.

Perennial glaucous glabrous herb; stems probably few from stout base with remnants of dead leaf bases, 35–45 cm, erect, with 7 to 10 leaves scattered along

stem; branches mainly from upper leaves. Leaf lamina ovate in outline, 3–10 × 1.5–4 cm, sub-bipinnatisect with 3 pairs of broadly ovate leaflets, deeply cut into obtuse, sometimes slightly overlapping lobes 2–5 mm broad; petioles 1–7 cm; petiolules 1–10 mm (uppermost leaves progressively smaller and shortly stalked). Racemes terminal on stems and branches (occasionally 1 or 2 lateral), unbranched, dense, shortly stalked, 15- to 40-flowered, elongating to up to 13 cm in fruiting stage; bracts narrowly lanceolate, 2–6 mm; pedicels thin, 4–9 mm. Flowers yellow; sepals ovate, acute, shallowly dentate, 2.5–3 × 1.5 mm; upper petal ca. 14 mm long, ecristate, apiculate, with very short rounded spur to 3 mm. Capsule (including style) ca. 20 mm, 2- to 4-seeded, ± constricted between the seeds, gradually attenuate apically and terminated by ca. 5 mm style (the seedless narrow apical portion of the capsule is together with the style 7–10 mm long); seeds 1.75–2 mm, strongly keeled, smooth, beaked, with short elaiosome.

Etymology. The epithet is derived from Latin “longus” (long) and “stylus” (style), referring to the long slender fruit apex.

Relationships. *Corydalis longistyla* clearly belongs in section *Strictae* (glaucous glabrous perennial; bracts small, lanceolate, scarious; petals yellow; spur short, saccate; stigma with small body and 10 long papillae; capsules nonexplosive) and is most similar to *C. krasnovii* Michajlova. From this species it deviates in the apiculate (vs. non-apiculate) flowers with even shorter spur (to 3 mm vs. 3–4 mm). It differs from *C. pseudomicrophylla* Z. Y. Su and *C. bibracteolata* Z. Y. Su in the simple racemes and very short spur, from *C. adunca* Maximovicz in the broad leaf lobes, and from all four mentioned species in the fruit, which is conspicuously constricted (vs. not constricted) between the fewer seeds (2 to 4 vs. 5 to 9).

IUCN Red List category. *Corydalis longistyla* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

Paratype. CHINA. **Sichuan:** Dege, 3160 m, 11 July 1979, *s. coll.* 0277 (CDBI).

SECTION *SOPHOROCAPNOS* (TURCZANINOW) FUKUHARA & LIDÉN

2. *Corydalis cryptogama* Z. Y. Su & Lidén, sp. nov.

TYPE: China. Sichuan [or possibly Hubei]: Daxian, Dazhu, Shuang-gong Gongshe, sunny hillside, 600–700 m, 25 May 1978, *Herbal exp. of Daxian pref.* 0275 (holotype, SM).

Herba verisimiliter annua; caulis foliatus ramosissimus, foliis bipinnatisectis, foliolis integris vel plus minusve

profunde trifidis, lobis ovatis dentatis. Racemi densiflori in statu fructifero elongati; bracteeae rhombico-obovatae plerumque acuminatae, pedicellos breves aequantibus vel iis duplo longiores. Flores albidii minutissimi non calcarati, ad apicem capsulae (maturae fusiformis) subpersistentes. Semina ca. 1.75 mm longa ac lata rotundata non carinata tuberculata, elaiosomatibus planis membranaceis facile cadentibus instructa.

Herb, probably annual, with branched leafy angular stems up to 20 cm. Leaves broadly ovate in outline, bipinnate with 3 to 4 pairs of stalked pinnae, each with 1 to 2 pairs of shortly stalked distant leaflets that are entire to deeply divided into ovate-dentate lobes; upper leaves much smaller than those of midstem. Racemes shortly stalked, leaf-opposed, very dense at first, soon elongating, to 10-flowered; bracts rhombico-obovate, obtuse to usually acuminate, with short indistinct stalk, equaling or longer than the pedicels; pedicels 1–2 mm (to 4 mm in fruit), rather thick, slightly arcuate-recurved in fruit. Sepals 1–2 × 1 mm, ovate, dentate; corolla white (?), closed, small, ca. 5 mm, ecalcarate, as if stunted in bud stage, completely cleistogamous; outer petals with narrow dentate crests; stigma transversely oblong with indistinct lateral papillae and 2 apical papillae. Capsule fusiform, ca. 20 × 4 mm, 10- to 15-seeded with seeds in 2 rows, usually crowned at apex by corolla, which soon breaks loose from the pedicel by the quickly growing fruit; seeds ca. 1.75 mm, rounded in outline, not keeled; testa cells convex, set in concentric rows; each testa cell toward back of seed with a low tubercle, but on seed flanks small radial linear grooves between the testa cells dominate the pattern; elaiosome flat and membranous, partly folded back over the seed, easily detaching; hilum broader than long.

Etymology. The epithet is derived from Greek “kryptos” (hidden) and “gamos” (wedding), referring to the closed flowers.

Relationships. *Corydalis cryptogama* clearly belongs in section *Sophorocapnos* (tap-rooted annual; bracts small, lanceolate, entire; spur obtuse, shorter than limb; stigma transversely set with few and indistinct papillae; fruit nonexplosive; seeds tuberculate with large membranous elaiosome) and is similar to *C. parviflora* Z. Y. Su & Lidén from southeast Yunnan, southwest Guizhou, and east Guangxi. It differs from this species in much more divided leaves, short peduncles (to 1 cm vs. 2–4 cm), broader bracts, and seeds that are produced in two rows (vs. one row). *Corydalis parviflora* has been stated to be perennial (probably mistakenly), whereas the new species is probably annual. A further similarity between them is the production of cleistogamous flowers, but this occurs also in other species of this section (*C.*

balansae Prain, *C. brevipedunculata* (Z. Y. Su) Z. Y. Su & Lidén).

IUCN Red List category. *Corydalis cryptogama* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

SECTION *CHRYSOCAPNOS* WENDELBO

3. *Corydalis milarepa* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Xizang: Mi La N of Rutok [92°21'E; 29°49'N], E side, open stony soil, 4850 m, 12 July 2005, *H. Jans & J. Birks* 6 (holotype, UPS).

Herba glabra valde glauca verisimiliter perennis; caules ascendenti foliati non ramosi. Folia basalia triangularia subsessilia ternata, foliolis pinnatis segmentis integris vel profunde bi-trifidis, lobis integris lanceolatis acutis; folia superiora minora pinnata ovato-oblonga. Racemi densi 10-ad 30-flori; bracteae inferiores subpinnatifidae, superiores parce divisae vel integrae, pedicellos aequantibus, pedicellis stato florifero leviter arcuato-recurvatis. Flos malvinus vel lilacinus, late cristatus, ca. 17 mm longus calcar ca. 8 mm longo inclusus. Capsula ignota.

Probably perennial, glabrous, slightly fleshy, glaucous herb; underground parts unknown; flowering stem ca. 13 cm, unbranched, ascending, with 4 leaves. Lower cauline leaves triangular in outline, subsessile, ternately divided with rather long-stalked primary leaflets, these pinnate with 2 to 3 pairs of entire to bi- or trifid pinnae ca. 10 mm; central primary leaflet 35–40 mm, lateral leaflets 20–25 mm; ultimate leaf segments lanceolate to broadly oblanceolate, acute, 2–4(–5) mm broad, not or slightly overlapping; middle and upper cauline leaves sessile, smaller (ca. 20 mm and ca. 10 mm, respectively, in type), narrowly ovate in outline with basalmost pair of lateral leaflets sessile and short, hardly longer than second pair. Racemes dense, 10- to 30-flowered, up to 4 cm in anthesis; lower bracts subpinnately divided to dentate, with lower lobes often again divided or dentate; upper bracts narrower, less divided or entire; pedicels soon becoming slightly arcuate-recurved, 6–8 mm, equaling bracts. Flowers pale to dark mauve, often more blue toward spur, with keels of outer petals much darker, ca. 17 mm; inner petals whitish at tip (except for the inner, hidden, adaxial side, which has a dark purple blotch like most *Fumarioideae*); sepals to 1 mm, whitish, apically deeply divided into a few long narrow teeth; outer petals broadly crested, acute at apex, or lower one subobtusely; spur of upper petal ca. 8 mm, slightly curved downward, somewhat tapering toward obtuse tip; nectary ca. 5 mm; inner petals ca. 8 mm; ovary with ca. 7 ovules; stigma almost squarish with 4 apical papillae, and geminate lateral and basal papillae. Fruit and seeds unknown.

Distribution. *Corydalis milarepa* is only known from a single flowering stem and three photos taken by Harry Jans and Hilary Birks in conjunction with the type collection. The species was seen in a few places between 4850 and 5050 m (Birks, 2006).

Etymology. The epithet, an arbitrarily compounded noun in apposition (ICBN Art. 23.1; McNeil et al., 2006), is based on Mi La, the type locality, and “repa,” a Tibetan dance with connection to Milarepa, a very important yogi in Tibetan Buddhism, famous for his beautiful songs and his ability to fly.

Relationships. *Corydalis milarepa* is provisionally placed in section *Chrysocapnos*, although the underground parts are unknown, but deviates from other species in this section in its non-yellow flowers. The most similar species is *C. imbricata* Z. Y. Su & Lidén, but our new species has leaves with more spaced and acute leaflets (vs. closely imbricate and obtuse), divided bracts (vs. entire), and mauve flowers (vs. yellow). Furthermore, it is completely smooth, whereas *C. imbricata* has papillose-scabrid margins to leaves and bracts.

IUCN Red List category. *Corydalis milarepa* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

SECTION *ELATAE* FEDDE EX C. Y. WU & H. CHUANG

Species 4 to 17 all belong in section *Elatae* s.l., characterized by fleshy rhizome with fleshy imbricate scales, apically with axillary stems, blue (rarely purple or white) long-spurred flowers, thin, straight, erectopate fruiting pedicels, and explosively dehiscent capsules.

4. *Corydalis aeditua* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Sichuan: Omeishan, Xi Xiangchi [“pool of washing elephant,” famous temple], 28 June 1976, *s. coll.* 1678 (holotype, PE).

Herba perennis; rhizoma squamis crassis, radicibus subcrassis elongatis; caulis gracilis foliatus non vel parce ramosus. Folia radicalia pauca parva petiolata ternata profunde lobata, lobis obovatis; folia caulina 3 ad 4, brevipetiolata vel subsessilia ternata ad biternata, foliolis obtriangularibus basi cuneatis apice profunde crenatodentatis vel parum lobatis, lobis obtusis oblongis. Racemi breves densi, ca. 10-flori; bracteae late spatulatae sub-integrae, pedicellis 7–10 mm longis gracilibus breviores. Sepala rotundata profunde dentata; corolla azurea (?); petala exteriora anguste cristata apicem versus late obovato-rotundata mucronata; petalum superum calcar ca. 11–13 mm longo attenuato non curvato. Capsula ignota.

Rhizome with fleshy scales and few rather thick roots; stems slender, ascending, ca. 35 cm, with 3 or 4 shortly stalked small leaves along upper half, un-

branched or with a flowering branch from axil of uppermost leaf. Leaves glaucous abaxially, green adaxially; radical leaves few, with small ternate lamina, ca. $2 \times 2\text{--}3$ cm, with leaflets deeply lobed into obovate segments; petiole 10–12 cm; cauline leaves like radical; lowermost cauline leaf sometimes long stalked; upper cauline leaves shortly stalked to subsessile; lamina ternate to biternate with obtriangular leaflets with cuneate base, apically grossly crenate-dentate to shallowly lobed into oblong obtuse segments 2–5 mm wide. Raceme short and dense, ca. 10-flowered; bracts broadly spatulate, obtuse, often with a few small lateral teeth, ca. 5 mm; pedicels 7–10 mm at anthesis, probably erect. Sepals rounded, $2\text{--}2.5 \times 2$ mm, profoundly dentate; corolla given as blue on label (*s. coll. 1678*, PE) appears to be purplish blue at apex with blue spur and pale blue dorsal wings to inner petals; outer petals narrowly crested with broad mucronate apices; spur of upper petal straight, tapering to a narrow apex, 11–13 mm, with a thin nectary reaching $2/3$ through spur; lower petal 12–13 mm, with a short claw widened into a broad rounded apically mucronate erose-dentate limb; inner petals ca. 11 mm, with dorsal wings slightly projecting beyond apex; ovary linear with 11 to 12 ovules, tipped by a ca. 3 mm style; style conspicuously swollen and flexible where stigma attaches. Fruit unknown.

Etymology. The epithet “aeditua,” which is Latin for temple guardian, is treated as a noun in apposition.

Relationships. *Corydalis aeditua* is closely related to *C. omeiana* (C. Y. Wu & H. Chuang) Z. Y. Su & Lidén (Ree, Wang & Lidén, unpublished data), which is a common species higher up on Omei shan, but our new species differs in the crested outer petals, much dentate lower petal limb, thin sepals, rather different foliage, and a very different ecology.

IUCN Red List category. *Corydalis aeditua* should be classified as VU (Vulnerable) according to IUCN criteria (IUCN, 2001). The species has only been collected twice, possibly in the same spot. Only four individuals were seen in 2006. It should be noted that the search was made after the plant had withered, and so it could have been easily overlooked and is probably more common than this number suggests. However, it is quite possible that this is the only locality.

Paratypes. CHINA. **Sichuan:** Omei shan, below Xi Xiangchi, 1600 m, almost vertical very wet cliff above stream, 11 Aug. 2006, Lidén & Yu S.-X. 72 (fragment at UPS).

5. *Corydalis gymnopoda* Z. Y. Su & Lidén, sp. nov.

TYPE: China. Sichuan: Jinchuan [Dajin], Kasa,

Banbian shan, in forest, 3800 m, 23 June 1958, Xing Li 77854 (holotype, PE).

Caules debiles, inferne nudi, superne 2-foliati, non ramosi. Folia radicalia longepetiolata ternata, foliis breviter petiolulatis in lobis late obovatis subacutis divisis; folia caulina sessilia, parva, radicalibus similia. Racemi densissimi 6- ad 10-flori; bractae integrae obovatae subacutae, pedicellos subaequantur vel paulo longiores. Corolla azurea cristata calcari subrecto obtuso.

A *Corydalis pseudobarbispala* Fedde caule solum in triente supra foliato et floribus multo minoribus differt.

Rhizome probably short and with rather few fleshy scales; stems simple, rather slender, 16–23 cm, naked below, with 2 leaves in upper $1/3$. Radical leaves long stalked with petiole 9–16 cm; lamina ca. 3×4 cm, ternately divided with stalked leaflets \pm deeply cut into broadly obovate subacute lobes that are often again shallowly 3-lobed at apex; cauline leaves like radical but sessile and usually smaller, up to 2 cm; upper leaf set shortly below inflorescence, smaller and less divided. Raceme very dense, 6- to 10-flowered; bracts obovate-subacute, 6–10 mm, entire; pedicels 5–8 mm. Corolla blue, darker at apex; outer petals with 1–2 mm broad crest attenuate toward apex; spur ca. 9 mm, obtuse; inner petals ca. 8 mm. Fruit unknown.

Etymology. The epithet is based on Greek “gymnos” (naked) and “podus” (foot), referring to the basally leafless stem.

Relationships. *Corydalis gymnopoda* is similar to *C. pseudobarbispala*, but differs in much smaller flowers and absence of leaves in the lower half of the stem. The type specimen was originally determined as *C. pingwuensis* C. Y. Wu, but this species has stems leafy throughout, more divided leaves with narrower leaf lobes, laxer racemes, and much narrower flowers.

IUCN Red List category. *Corydalis gymnopoda* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

6. *Corydalis harry-smithii* Lidén & Z. Y. Su, nom. et stat. nov. Replaced name: *Corydalis elata* subsp. *ecristata* C. Y. Wu, Flora Reipubl. Popularis Sin. 32: 544. 1999. TYPE: China. Sichuan: Kangding, Yülingkong, in prato herboso-fruticoso, 3100 m, 22 July 1934, H. Smith 10748 (holotype, S; isotype, UPS).

Rhizome short, with fleshy scales that become dark on drying, terminating in a small rosette of leaves; stems 1 to 4, 35–60 cm, erect to ascending, sparingly leafy from middle upward, branched. Radical leaves long stalked; petiole 10–22 cm; lamina glaucous

abaxially, green adaxially, 4–7 × 5–10 cm, ternate to biternate with leaflets shallowly to deeply divided into obovate entire to divided lobes; ultimate lobes (1–) 2–15 mm broad, obtuse; cauline leaves smaller, shortly stalked, less divided. Racemes 10- to 32-flowered (much less in late axillary racemes); bracts 6–15 mm; upper bracts linear to narrowly oblanceolate, entire to slightly dentate; lowermost bracts usually larger and divided, or similar to uppermost leaves; pedicels thin, suberect in fruit, 10–20(–30) mm. Sepals narrowly ovate-acute, to 1 mm, with few small teeth; outer petals ecristate, sky blue; spur of upper petal 8–12 mm, straight or slightly curved downward, slightly tapering toward apex, with very thin, almost invisible nectary reaching 2/3 through spur; lower petal 12–13 mm, with rhombic acute to slightly acuminate obtusely dentate limb attenuate to shallowly gibbous claw; inner petals 10–11 mm, with pale claw about half as long; dorsal crests of inner petals with a clear blue portion subapically, but white at the very tip; apical internal (adaxial) side of inner petals with a prominent dark purple blotch. Capsule pendent from erectopatent pedicel, obovate to elliptic, 2- to 9-seeded, ca. 10 × 3–4 mm, tipped by sharply set off ca. 5 mm style. Seeds smooth, ca. 2 mm, with prominent uneven elaiosome.

Distribution and phenology. *Corydalis harrismithii* grows west and southwest of Kangding (Sichuan), at 3100–3800 m, in the shade of trees or shrubs in moist soil close to running water. Flowering in July, fruiting August.

Etymology. The epithet commemorates Dr. Harry Smith from Uppsala, who collected extensively in Sichuan during three expeditions from 1923 to 1934. It is to be noted that “*ecristata*” is not available as a specific epithet in *Corydalis* due to the presence of *C. ecristata* (Prain) D. G. Long.

Relationships. *Corydalis harrismithii* is closely related to *C. elata* Bureau & Franchet, but differs in many-flowered racemes of smaller, thin-spurred flowers that are never crested and have a rudimentary nectary.

IUCN Red List category. *Corydalis harrismithii* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001). The species was recently collected in two different localities picked at random during the Lidén and Wang 2005 expedition.

Selected specimens examined. CHINA. **Sichuan:** Kangding, Cheto La, 4 Aug. 1934, *H. Smith 10930* (UPS); E Cheto La, 14 Aug. 2005, *Wang Y.-W. & M. Lidén 48* (PE); Kangding, S Yulingkong toward Gongga shan area, N of pass, 15 Aug. 2005, *Wang Y.-W. & M. Lidén 53* (PE, UPS);

Kangding, 1924, *Cunningham 451* (E); S of Kangding, Yulong-Hsi, Minya country, July 1929, *J. Rock 17579a* (A).

7. *Corydalis lagochila* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Sichuan: Baoxing, under forest, 3200 m, 14 June 1958 (fl), [*Tzu-pu Soong*] *Zhang X.-B. & Ren Y.-X. 5393* (holotype, PE; isotype, SZ).

Herba glabra perennis; caules humiles 1(ad 2)-foliati non ramosi. Folia radicalia parva petiolata ternata vel subbiternata profunde lobata, lobis obovatis; folium caulinum brevipetiolatum ternatum, foliolis sessilibus profunde 2 vel 3 divisis, segmentis plus minusve partitis, lobis obovatis. Racemi corymbosi, 6- ad 7-flori; bracteae integrae late obovatae obtusae basin cuneatae; bractea ima major basi lobis lateralis parvis; pedicelli bracteis duplo longiores. Sepala parva dentata; corolla azurea; petalum superum apice profunde emarginatum breviter et anguste cristatum, calcaris brevi late oblongo; petalum inferum limbo late rotundato emarginato; ovarium lineare pluriovulatum. Capsula ignota.

A *Corydale mucronipetala* (H. Chuang) Lidén & Z. Y. Su caulibus paucifoliatis petalis profunde emarginatis differt.

Glabrous perennial herb; rhizome short (?) with small fleshy scales; stems 11–15 cm, unbranched or with a late very small branch, with 1 or 2 leaves in upper half of stem. Radical leaves several, with 2–5 cm petiole; lamina triangular in outline, ca. 1.5–2.5 × 2–3 cm, ternate to biternate with rather deeply divided leaflets sometimes again shallowly divided apically; cauline leaf with short petiole, 5–10 mm, lamina rounded in outline, ca. 2 × 2 cm, ternately divided with leaflets deeply cut into 2 to 3 obovate lobes that may again be shallowly divided; if second cauline leaf present, similar to lowermost bract. Racemes corymbose, 6- to 7-flowered; bracts broadly obovate, 6–11 mm; lower one larger and with small lateral lobes; pedicels 12–22 mm, or upper ones shorter. Sepals rounded, ca. 1 mm, finely dentate; corolla blue, probably with a purplish hue (in sched., *Zhang X.-B. & Ren Y.-X. 5393*, PE); outer petals with short and low subapical slightly dentate crests; upper petal deeply emarginate at apex, with rounded divisions and a very broad and short spur, 10–11 × 4 mm, not tapering toward obtuse apex; nectary 4–5 mm; lower petal 17–18 mm, with distinct claw and wide emarginate limb, 8–10 mm broad. Ovary linear with 42 ovules.

Etymology. The epithet is based on Greek “*lago-*” (pertaining to hare) and “*chilos*” (lip), referring to the shape of the limbs of the outer petals.

Relationships. *Corydalis lagochila* is closely related to *C. mucronipetala*, but distinguished by few leaves (usually 1 vs. 4 or 5), a broader corolla with much smaller crests and shorter spur, and above all by the deeply emarginate (vs. conspicuously mucronate) outer petals.

IUCN Red List category. *Corydalis lagochila* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

8. *Corydalis madida* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Sichuan: Wenchuan, Woolong, Yingchanggou, in seepage on NE-facing almost vertical soft rocks with a slimy cover of bacteria and cyanophytes, 2100 m, 8 Aug. 2005, Wang Y.-W. & M. Lidén 1 (holotype, PE; isotypes, KUN, MO, UPS).

Herba perennis; rhizoma horizontale squamis crassis dense disticho-imbricatis; caules foliati ramosi rubescentes minutissime pubescentes. Folia intense glauca, radicalia petiolata biternata, foliolis late obovatis; folia caulina radicalibus similia sed minora. Racemi densi, 10- ad 23-flori, in statu fructifero elongati; bracteae inferiores late obovatae vel rotundatae parce divisae basi cuneatae interdum brevissime petiolatae, pedicellis 8–20 mm longis gracilibus breviores; bracteae superiores minores, saepe late lanceolatae integrae. Sepala rotundata dentata; corolla ecristata subacuta eburnea, apicem versus albo-viridis, calcar 16–18 mm longo gracili leviter curvato vel sub-sigmoideo. Capsula anguste fusiformis polysperma, ex pedicello stricto pendula.

Rhizome horizontal, 1–6 cm, densely clothed with imbricate thick fleshy reddish scales, apparently in 2 rows; stems few to several, 15–40 cm tall, reddish in fresh state, leafy, branched, finely papillose pubescent below. Leaves very glaucous on both sides, especially abaxially; lamina biternatisect to sub-bipinnatisect; leaflets obovate, shallowly to deeply cut into obovate obtuse ultimate lobes; uppermost leaves (and leaves of shorter stems) less divided, grading into bracts. Racemes very dense at anthesis, soon elongating, 10- to 23-flowered; lower bracts rounded in outline, shallowly cut into few obtuse lobes, middle and upper bracts entire, broadly obovate, attenuate at base, shorter than the 8–20 mm straight erectopatent thin pedicels. Sepals rounded, ca. 1.5 × 2 mm, finely dentate; corolla creamy white, sometimes with faint pinkish tint toward spur, pale yellowish green toward apex; dorsal crests of inner petals white; inner side of apex of inner petals dark red (not visible from outside); after pollination with muddy purplish hue and apex of inner petals becoming darker; outer petals ecristate; spur of upper petal narrow, attenuate toward tip, slightly sigmoidally curved, more strongly curved downward in bud stage, 16–18 mm; nectary 1/2–2/3 as long; inner petals 14–15 mm, including 10 mm claw; lower petal ca. 15 mm, straight with long narrow claw gradually dilated into rhombic-acute, sometimes shallowly 3-lobed limb; stigma with pronounced basal lobes. Capsule reddish when fresh, sharply pendent from straight pedicel, narrowly fusiform, 4- to 15-

seeded (ovary with up to 18 ovules), 13–15 × 2–3 mm, gradually attenuate into ca. 4 mm long straight style. Seeds small (ca. 1.5 mm) with small elaiosomes.

Distribution and phenology. *Corydalis madida* is only known from two small colonies on vertical cliffs along tributaries to the Woolong river. A third locality for this species (valley of heroes, 2500 m, 23 July 2001), in the Woolong valley, has been recorded by John Birks, Bergen, Norway, and verified by photographs. Flowering in July and August, fruiting August.

Etymology. The epithet is derived from Latin “madidus” (watered), referring to the wet habitat of this species.

IUCN Red List category. *Corydalis madida* should be classified as VU (Vulnerable) according to IUCN criteria (IUCN, 2001). The species is known from two localities, both very restricted and poor in individuals (probably < 100), and commercial collection could easily wipe out a whole population.

Paratype. CHINA. Sichuan: Wenchuan, Woolong valley, 2100–2300 m, s. coll. 1238 (KUN).

9. *Corydalis microflora* (H. Chuang) Z. Y. Su & Lidén, stat. nov. Basionym: *Corydalis flexuosa* Franchet var. *microflora* H. Chuang, Acta Bot. Yunnan. 13: 132. 1991. *Corydalis flexuosa* subsp. *microflora* (H. Chuang) C. Y. Wu, Flora Reipubl. Popularis Sin. 32: 118. 1999. TYPE: China. Sichuan: Shih-mien, 2480 m, 20 June 1955, Xie Z.-J. [Hsieh C.-C.] 41235 (holotype, PE; isotype, SM).

Rhizome short (or cut short at collecting) with small crowded fleshy scales; stems slender, erect, simple, 25–35 cm, naked in lower 2/3, above with 1 to 2 leaves. Radical leaves (only one seen) with thin petiole, ca. 9 cm; lamina glaucous abaxially, biternate, ca. 3 × 3 cm, leaflets obovate, entire (terminal one shallowly 3-lobed); cauline leaves shortly stalked to subsessile, biternate, 3–5 × 3–4 cm; petiolule of lateral primary leaflets ca. 5 mm; petiolule of terminal leaflet 10–15 mm; secondary leaflets 8–15 mm, broadly obovate, ± deeply divided into broad rounded lobes. Racemes lax, 5- to 7-flowered, only slightly elongating in fruit; lower bracts like cauline leaves, upper bracts progressively smaller and less divided; pedicels 6–10 mm in flower; fruiting pedicels sub-erect to patent, 10–15 mm. Sepals to 1 × 1 mm, grossly dentate; corolla ca. 20 mm, probably blue or pale purple; outer petals acute; spur of upper petal ca. 10 mm, narrowly cylindrical, straight or slightly curved downward; inner petals ca. 10 mm; stigma rounded at base (no basal protrusions). Capsule 5- to 13-seeded, linear, 15–20 mm, including ca. 2.5 mm long style.

Relationships. *Corydalis microflora* is odd in section *Elatae* in its biternate bracts with stalked rounded leaflets and peculiar stigma. The original epithet is maintained here, although there are other members in the section *Elatae* with equally small or even smaller flowers (e.g., *C. gymnopoda* Z. Y. Su & Lidén, *C. pingwuensis* C. Y. Wu).

IUCN Red List category. *Corydalis microflora* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

10. *Corydalis mucronipetala* (H. Chuang) Lidén & Z. Y. Su, stat. nov. Basionym: *Corydalis flexuosa* var. *mucronipetala* C. Y. Wu & H. Chuang, Acta Bot. Yunnan. 13: 132. 1991. *Corydalis flexuosa* subsp. *mucronipetala* (C. Y. Wu & H. Chuang) C. Y. Wu, Flora Reipubl. Popularis Sin. 32: 118. 1999. TYPE: China. Sichuan: Tianquan, 3340 m, *Chu K.-L. 2806* (holotype, PE; isotypes, E, P, SZ).

Relationships. Although possibly related to *Corydalis flexuosa* Franchet (based on the linear capsules), *C. mucronipetala* deviates considerably in a number of characters. The stems are much shorter (10–25 cm vs. 25–40 cm), the outer petals are broadly crested (vs. ecristate) and conspicuously mucronate (vs. upper petal acute, lower petal obtuse), the spur is thicker and shorter, and the ovary has twice as many ovules (i.e., up to 40). The habitats are also widely different; *C. mucronipetala* grows in screes and seasonally flooded bouldery riverbeds, and *C. flexuosa* grows in humid stable situations in open forests or on wet cliffs. *C. mucronipetala* is closely related to *C. lagochila* Lidén & Z. Y. Su. For a discussion, see that species.

IUCN Red List category. *Corydalis mucronipetala* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001).

11. *Corydalis omeiana* (C. Y. Wu & H. Chuang) Z. Y. Su & Lidén, stat. nov. Basionym: *Corydalis flexuosa* var. *omeiana* C. Y. Wu & H. Chuang, Acta Bot. Yunnan. 13: 131. 1991. *Corydalis flexuosa* subsp. *omeiana* (C. Y. Wu & H. Chuang) C. Y. Wu, Flora Reipubl. Popularis Sin. 32: 118. 1999. TYPE: China. Sichuan: Omei shan, s.d., *Chen S.-Y. 3908* (holotype, SM, photo, KUN).

Distribution and relationships. *Corydalis omeiana* is common on Omeishan between 2500 and 3000 m, often growing together with *C. davidii* Franchet in disturbed glades, along roadsides, and in clearings, but also in rather shady sites in forests. It was introduced into the horticultural trade several years

ago as *C. elata*. It has a habitual likeness to *C. flexuosa*, explaining why it was first attributed to that species, but the elliptic few-seeded fruit (vs. linear many-seeded fruit) and broad claw to the lower petal (vs. claw linear in *C. flexuosa*) point to a closer relationship with *C. elata*. It deviates from *C. elata* in the leaves that are glaucous only abaxially, the shortly stalked and much smaller radical leaves, the dense racemes, and the large uneven early-falling sepals.

IUCN Red List category. *Corydalis omeiana* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001). The species is common on Omeishan, and even seems to benefit from the current heavy human disturbance.

12. *Corydalis papillosa* Z. Y. Su & Lidén, sp. nov. TYPE: China. Sichuan: Mianning, 4200 m, 30 June 1978, *Sichuan med. plant Mianning exp. 0305* (holotype, SM).

Herba perennis ubique minutissime dense papilloso-pubescentis; rhizoma breve squamis paucis crassis imbricatis, radicibus subcrassis elongatis; caules 15–19 cm longi inferne nudi, superne 1- ad 2-foliati, non ramosi. Folia radicalia 4 ad 6, ternata usque quinata, foliolis obovatis profunde bi vel trilobatis, lobis anguste oblongis obtusis; folia caulina sessilia profunde divisa, lobis anguste lineari-oblongis. Racemi subsecundi 6- ad 13-flori; bractae parvae anguste oblanceolatae sub-integrae vel bractae inferiores parce divisae, pedicellos 6–14 mm longos graciles aequantes vel iis breviores. Sepala minuta dentata; corolla ecristata acuta, calcar 10 mm longo recto obtuso. Capsula ignota.

Whole plant finely and densely papillose-pubescent; stems few, unbranched, 15–19 cm, from short rhizome with long wiry roots. Radical leaves 4 to 6; petiole 4–7 cm; lamina divided to base into 3 to 5 sessile 15–20 mm deeply divided obovate leaflets; ultimate lobes oblong, 2–3 mm wide, obtuse; cauline leaves 1 to 2 in upper half of stem, sessile, deeply and irregularly divided into ca. 5 narrow lobes. Racemes shortly stalked, subsecund (?), 6- to 13-flowered, rather lax; bracts small, narrowly oblanceolate, 5–7 mm, or lowermost larger and divided; pedicels 6–14 mm, not known in fruiting stage. Sepals ca. 0.5 × 1 mm, dentate; corolla purplish green (appears blue in dry state), ecristate, subacute at apex; spur of upper petal straight, hardly tapering to obtuse apex, ca. 10 mm, with nectary reaching less than halfway; lower petal ca. 12 mm, with short claw gradually widened into rhombic slightly sinuate-dentate acute limb, and with small gibbosity close to base.

Etymology. The epithet *papillosa*, meaning “covered with papillae,” is based on Latin “papilla” (nipple) and “-osus” (suffix meaning “full of”), and refers to the fine papillose pubescence of this plant.

Relationships. The lower petal reaches conspicuously more forward than its upper counterpart, giving the flower a distinctive profile. *Corydalis papillosa* seems rather isolated in the section *Elatae*, but is possibly related to a group comprising, e.g., *C. pingwuensis*, *C. rorida* H. Chuang, *C. gymnopoda*, and *C. panda* Lidén & Y. W. Wang.

IUCN Red List category. *Corydalis papillosa* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

13. *Corydalis procera* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Sichuan: W Sichuan, July 1908, *E. Wilson* 2295 (holotype, K).

Herba perennis; rhizoma horizontale breve, squamis crassis dense imbricatis; caules graciles 60 cm longi superne 3- ad 4-foliati, non vel parce ramosi. Folia radicalia pauca parva bi-tri-ternata petiolata, lobis anguste oblongis; folia caulina parva subsessilia radicalibus similia. Racemi densi 15- ad 17-flori; bracteae parvae anguste lanceolatae sub-integrae, pedicellis 7-9 mm longis gracilibus breviores. Sepala minutissima; corolla ecristata subacuta pallida, calcarum longo non vel leviter curvato. Capsula ignota.

Perennial herb; rhizome short, thick, densely clothed with fleshy scales, becoming a black and hard bulblike structure in herbarium specimens; stems unbranched or with 1 late branch, slender, to 60 cm, with 3 to 4 small leaves scattered in upper half of stem. Radical leaves few, small, in basal rosette; petioles 5-6 cm, lamina ca. 5 × 5 cm, bi- to triternate, ultimate lobes narrowly oblong, ca. 2 mm broad; cauline leaves like radical, but shortly stalked or sessile. Racemes short (fruiting stage not known), 15- to 17-flowered; bracts small, ca. 5 mm, narrowly lanceolate with the occasional narrow tooth or lobe (lowermost bract in one raceme of type specimen large and similar to uppermost leaf); pedicels thin, 7-9 mm. Sepals to 0.5 mm; corolla ecristate, apparently white or at least pale, subacute at apex; spur of upper petal 15-16 mm, slightly attenuate, almost straight to slightly bent downward; nectary reaching almost halfway through spur; lower petal ca. 12 mm, straight; inner petals 11-12 mm; ovary with 6 to 7 ovules and 4 mm style. Capsule unknown.

Etymology. The Latin epithet “procerus” (tall) “is said of plants which are taller than their parts would have led one to expect” (Stearn, 1992: 330).

Relationships. *Corydalis procera* is possibly related to *C. flexuosa*, and the type was so determined by Prof. Wu Cheng-Yih, but it is readily distinguished by its shorter pedicels (7-9 mm vs. 15-20 mm), fewer ovules (6 to 7 vs. 15 to 23), and comparatively longer spur (clearly longer than limb vs. shorter than to equaling limb).

IUCN Red List category. *Corydalis procera* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

14. *Corydalis pseudomairei* C. Y. Wu ex Z. Y. Su & Lidén, nom. et stat. nov. Replaced name: *Corydalis mairei* var. *megalantha* C. Y. Wu, Acta Bot. Yunnan. 13: 138. 1991. TYPE: China. Sichuan: Leibo, Huang-mao-geng, 2900 m, wet places in dense forest, 19 June 1959 (fl), *Sich. Econ. Pl. Exp. (SEPE)* Liang 0766 (holotype, KUN; isotype, PE).

Distribution and phenology. *Corydalis pseudomairei* grows in southern Sichuan at 2400-3600 m on shady, wet, forested hill slopes. Flowering in May to July, fruiting July to August.

Etymology. The epithet was suggested by Prof. Wu Cheng-Yih (in sched., *Sich. Econ. Pl. Exp. (SEPE)* Liang 0766, KUN; pers. comm.) based on Greek “pseudo-” (prefix meaning “false”), referring to the similarity of this species to *Corydalis mairei* H. Léveillé.

Relationships. *Corydalis pseudomairei* is clearly distinct from *C. mairei* in the stem (sparingly leafy only above with few spreading branches vs. leafy throughout with numerous erect strict branches), the lower bracts (3-5 cm vs. 1-2 cm), the very long pedicels to the lower flowers (25-35 mm vs. 10-20 mm), and the larger flowers (26-30 mm vs. 21-24 mm).

IUCN Red List category. *Corydalis pseudomairei* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

Selected specimens examined. CHINA. **Sichuan:** Butuo, Bushi, Wu-ke-mu-chang, Luo-gu-ri-ze, 16 July 1976, *Sichuan Pl. Coll.* 13800 (CDBI, PE); Leibo, 9 Sep. 1983, s. coll. 118119 (PE, SM, SZ); Liangshan, Leibo, Wenshui district, Panjia shan, 17 May 1959, *Sichuan econ. pl. exp (SEPE)* 0161 (PE); Leibo, *Sichuan econ. pl. exp (SEPE)* Liang 0832 (KUN).

15. *Corydalis sarcolepis* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Sichuan: W Sichuan, 2435 m, May 1904 (fl), *E. Wilson* 3179 (holotype, K; isotype, P).

Herba perennis glabra; rhizoma horizontale squamis crassis dense imbricatis; caules simplices, superne parce foliati. Folia radicalia biternata longe petiolata, foliolis profunde divisio lobis angustis; folia caulina radicalibus similia sed minora, petiolis multo brevioribus. Racemi breves, 5- ad 11-flori, in statu fructifero parce elongati; bracteae inferiores profunde divisae, lobis angustis acutis interdum acuminatis petiolos subaequant; bracteae superiores minores parce divisae; pedicelli suberecti 15-20 mm longi. Sepala parva dentata; corolla purpurea vel rosea

ecristata obtusa, calcaris brevi crasso stricto vel leviter curvato apice rotundato. Capsula pachyderma obovato-obtusa ex pedicello stricto pendula.

Perennial glabrous herb; rhizome horizontal, densely clothed with thick fleshy scales; stems 30–40 cm, sparingly leafy in upper half, unbranched. Radical leaves few (2 to 4), 18–25 cm including petiole, 10–17 cm; lamina triangular in outline, 6–9 × 6–9 cm, biternate with leaflets deeply cut into narrowly oblong lobes; cauline leaves 2 to 4, like radical leaves but smaller and upper ones shortly stalked. Racemes 5- to 11-flowered, dense in anthesis, slightly elongating in fruit; lower bracts much divided into narrow acute or acuminate lobes, progressively smaller upward; uppermost ones occasionally entire; pedicels 15–20 mm, suberect, only slightly elongating in fruit, equaling or usually longer than bracts. Sepals 1–2 × 1–2 mm, finely dentate; corolla purple (type specimen) to pale red (*Veg. Team 41623*, CDBI), ± at right angle to pedicel; upper petal ecristate, broadly obtuse, with thick straight or slightly curved obtuse spur ca. 15 mm; nectary about half as long; lower petal ca. 20 mm, ecristate, straight, spatulate, with broadly obtuse limb; inner petals 15–17 mm including claw, ca. 10 mm. Capsule obovate with narrow base and broadly obtuse apex, pendent from erect pedicels, 10–12 × 4 mm, tipped by ca. 4 mm sharply set off style; capsule valves thick; seeds 10 to 16.

Distribution and phenology. *Corydalis sarcolepis* grows in forests and forest margins at 2200–2450 m, and is known from the surroundings of Moxi south of Kangding and Luding in the east Gongkashan area in Sichuan province. Flowering in April, fruiting May.

Etymology. The epithet is derived from Greek “sarx” (flesh) and “lepis” (scale), referring to the fleshy scales on the rhizome.

Relationships. *Corydalis sarcolepis* belongs in a group of three species. It can be distinguished from *C. weigoldii* Fedde (Sichuan: Wawushan) and *C. caput-medusae* Z. Y. Su & Lidén (northeast Yunnan) by the much broader, short-spurred flowers and the short broad fruit. A fourth taxon described in this group, *C. crassirhizomata* (C. Y. Wu) C. Y. Wu (Sichuan: Mianning), deviates from *C. weigoldii* only by broader leaf lobes.

IUCN Red List category. *Corydalis sarcolepis* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

Paratypes. CHINA, Sichuan: Kangding, A. E. Pratt 822 (K); Luding, Moxi, Gonghe, Hai-luo-gou, Da-wan-zi, 23 Apr. 1981, s. coll. 25117 (CDBI); Moxi, Hai-luo-gou, Shi-ban, 23 May 1981, s. coll. 25368 (CDBI); Moxi, Gonghe, Gonghesidui, Xiaogou, Apr. 1982, *Veg. Team 41623* (CDBI).

16. *Corydalis virginea* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Shaanxi: Chang’an, Ziwu xiang, Dongfang gou, humid slope, 2500 m, 7 June 1960, *NW China University Chang’an exped. 0050* (holotype, PE).

Herba glabra perennis; caulis non ramosus gracilis inferne nudus superne 5- vel 6-foliatus. Folia radicalia ignota; folia caulina sessilia obovata bi-tri-jugo-pinnata, foliolis basalibus parvis stipuliformibus; foliola obtriangularia cuneata apice profunde crenatodentata vel parum lobata. Racemi 12- ad 14-flori; bractea oblancoolatae sub-integrae, pedicellis (ca. 10 mm longis gracilibus) breviores. Sepala magna rotundata fimbriata; petala exteriora late et breviter cristata; petalum superum calcar ca. 9 mm longo anguste oblongo vix attenuato substricto. Capsula immatura fusiformis.

Rhizome short with few small fleshy scales; flowering stems (2 stems seen) to 45 cm, unbranched, slender, naked below or with a long-stalked withered leaf close to base, in upper half with 6 to 7 leaves. Radical leaves unknown; cauline leaves green adaxially, glaucous abaxially, obovate in outline, sessile, pinnate with 1 to 2 pairs of leaflets and a large terminal pinna; basalmost pair of leaflets distant from next pair of leaflets, rather small, stipule-like; leaflets flabellate, entire or ± divided into 2 to 3 divisions, apically conspicuously crenate-dentate; uppermost leaves small and simple, ± lobed, serrate-dentate, grading into lowermost bracts; all leaves producing an axillary dark bulbil, as in *Corydalis schweriniana* and *C. bulbiligera*. Racemes subspicate, 12- to 14-flowered; lower bracts broadly oblanceolate with a few sharp teeth; upper bracts often entire; pedicels thin, straight, erectopatent, ca. 10 mm, equaling bracts. Flowers purple; sepals rounded, ca. 4 × 4 mm, lacerate-dentate; outer petals with short and broad rounded crests; spur narrowly oblong, slightly tapering, almost straight or slightly curved upward, ca. 9 mm, with nectary 3/5 as long; inner petals ca. 7 mm. Immature capsule fusiform, ca. 8 mm, tipped by a ca. 2.5 mm style.

Etymology. The epithet is derived from the Latin “virgo” (virgin), referring to the asexual reproduction by bulbils.

Relationships. *Corydalis virginea* has unbranched slender stems with bulbils in all the several leaf axils, as has *C. schweriniana* Fedde and *C. bulbiligera* C. Y. Wu (series *Schweriniana* C. Y. Wu & H. Chuang), but the conspicuous stipuliform basal pair of leaflets and the large fringed sepals are unique for *C. virginea*.

IUCN Red List category. *Corydalis virginea* should be classified as VU (Vulnerable) according to IUCN criteria (IUCN, 2001). The species has only

been collected once, and the area is known to be subject to heavy recent exploitation.

17. *Corydalis yaoi* Lidén & Z. Y. Su, sp. nov. TYPE: China. Sichuan: Ebian [Obian], Washan, 16 July 1939, Yao Z.-W. 4230 (holotype, PE; isotype, SZ).

Herba perennis glabra; rhizoma squamis crassis; caules simplices, superne 1- ad 2-foliati. Folia radicalia longissime petiolata ternata subtus glaucissima, foliolis profunde divis, lobis late obovatis obtusis; folia caulina (sub-)sessilia, radicalibus similia sed minora. Racemi laxi, ca. 10-flori; bractee infimae folia caulina simulantes, superiores multo minores angustiores non vel parce divisae; pedicelli suberecti 12–32 mm longi. Sepala parva profunde dentata; corolla 25–28 mm longa purpurea non vel minime cristata subacuminata, calcar oblongo substricto 12–15 mm longo; ovarium anguste oblanceolatum 15-ovulatum; stylus ca. 5 mm longus. Capsula ignota.

Rhizome with large fleshy imbricate scales; stems slender, 33–50 cm, unbranched with 1 to 2 leaves in upper 1/3. Radical leaves few, very long stalked (petiole 17–30 cm) with ternately divided lamina, 3–4 × 4–5 cm, very glaucous abaxially, darker green adaxially, apparently slightly fleshy; leaflets shortly stalked (petiolule of median leaflet 9–12 mm, lateral 2–3 mm), divided almost to base into 2 to 3 broadly obovate lobes again cut to ca. 1/3 into 2 to 3 rounded lobules 3–7 mm broad; lowermost cauline leaf (present on 1 of 3 stems only) like radical leaves but with shorter petiole; upper cauline leaves like radical leaves, but (sub)sessile and slightly smaller. Racemes very lax, ca. 10-flowered; lower bracts similar to cauline leaves, but smaller and less divided; upper ones much smaller, narrower and less divided to entire, shorter than pedicels, 5–10 mm, decreasing in size upward; lowermost pedicel up to 32 mm, upper ones much shorter, at least in flowering stage, 10–15 mm. Sepals small, ca. 1 × 1.5 mm, deeply divided; corolla 25–28 mm, purplish blue, darker toward apical keels of outer petals; outer petals acute to shortly acuminate at apex, without or with very narrow crest; spur of upper petal almost straight, hardly tapering, 12–15 mm, with nectary ca. 2/3 as long; lower petal usually more acuminate at apex than upper one, and with a pronounced sac-like widening sub-basally; inner petals 13–14 mm; ovary narrowly oblanceolate with 15 ovules, tipped by ca. 5 mm style. Capsule not seen; judging from position of ovules in ovarium seeds will be in 2 rows.

Distribution and phenology. *Corydalis yaoi* is found in central Sichuan (Luding: Moxi; Ebian: Washan) at 3400 m. Flowering in June and July.

Etymology. The specific epithet honors Yao Z.-W., who collected the type specimen.

Relationships. *Corydalis yaoi* is related to *C. schusteriana* Fedde, but the rhizome with its imbricate fleshy scales is not quite as tight and columnar; the radical leaves are smaller (ca. 4 cm vs. ca. 10 cm), are less divided (ternate vs. biternate with deeply divided leaflets), and have longer petioles (17–30 cm vs. 11–15 cm); the racemes are laxer with fewer flowers; the bracts are much broader (in *C. schusteriana* narrowly oblanceolate); the sepals are broader and more divided; and the corolla is larger with a wide gibbosity on the lower petal (straight in *C. schusteriana*).

IUCN Red List category. *Corydalis yaoi* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

Paratype. CHINA. Sichuan: Luding, Moxi Gongshe, Hailuogou, Qiang-huo-peng, “under *Rhododendron*,” 3400 m, 18 June 1980, Wang F.-Q. & Liu Z. 22424 (SM).

SECTION *LINSTOWIANAE* C. Y. WU & Z. Y. SU

18. *Corydalis amplisejala* Z. Y. Su & Lidén, nom. et stat. nov. Replaced name: *Corydalis pseudomucronata* var. *cristata* C. Y. Wu, Acta Bot. Yunnan. 18: 401. 1996. TYPE: China. Sichuan: Guang-yuan, Shi-men, beside wet furrows under hill forest, 1800 m, 9 May 1959 (fl, fr), *Sichuan Economic Pl. Exp. (SEPE) Mian 4018* (holotype, CDBI; isotype, KUN).

Etymology. The epithet is derived from Latin “amplus” (large) and “sepalum” (sepal), referring to the very broad fringed sepals. It is to be noted that “*cristata*” is not available as a specific epithet in *Corydalis*, due to the presence of *C. cristata* Maximowicz.

Relationships. *Corydalis amplisejala* is here assigned to section *Linstowianae*, on account of being a tap-rooted biennial (or possibly annual) with erectopatent pedicels with pendent explosive fruits, and a stigma similar to that of other species in that section (e.g., *C. hemsleyana* Franchet & Prain, *C. linstowiana* Fedde). Our new species is easily distinguished from other species of section *Linstowianae* by the very large fringed sepals, the broadly winged and broadly crested corolla with upwardly curved spur, and the short broad fruits.

Corydalis pseudomucronata C. Y. Wu, Z. Y. Su & Lidén, on the other hand, belongs in section *Elatae* ser. *Mucronatae* C. Y. Wu & Z. Y. Su, which includes elegant perennials with horizontal rhizomes clothed with fleshy scales, long and lax racemes of thin-spurred flowers, and a peculiar stigma with numerous marginal papillae.

IUCN Red List category. *Corydalis amplisepala* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

SERIES *FEDDEANAE* C. Y. WU & H. CHUANG

Species 19 to 24 all belong in series *Feddeanae* s.l. (including series *Trachycarpae* (Fedde) C. Y. Wu & H. Chuang), characterized by the rather deeply seated thin rhizome with fasciculate storage roots and bulblike buds; stems and petioles of radical leaves tapering to a thin underground base; leaf veins few, parallel, often raised below; corolla yellow, more rarely purple, never sky blue, often with distinct veins; fruiting pedicels sharply recurved; and capsules explosively dehiscent.

19. *Corydalis dolichocentra* Z. Y. Su & Lidén, sp. nov. TYPE: China. Sichuan: Xiangcheng Xian, near Reda, Rizhaoshenshan [29°6'N, 99°41'32"E], alpine meadows, *Rhododendron* scrub & open scree slopes near summit, under *Quercus*, 3900–4700 m, 15 July 2004, D. E. Boufford, J. H. Chen, S. L. Kelley, J. Li, R. H. Ree, H. Sun, J. P. Yue & Y. H. Zhang 30711 (holotype, KUN; isotype, A).

Rhizoma parvum radicibus fasciculatis anguste oblongo-elongatis indistincte stipitatis; caulis 18 cm longus, superne bi-foliatus. Folia radicalia longe petiolata, lamina triangulari bipinnata, foliolis subpinnato-lobatis lobis ovatis acutis vel obtusis; folia caulina radicalibus similia, breviter petiolata. Inflorescentia 10-flora; bracteae anguste lanceolatae vel oblanceolatae 10–16 mm longae integrae, interdum infimae parum dentatae; pedicelli 7–8 mm longi, verisimiliter in statu fructifero elongati et valde recurvati. Sepala ignota (minutissima?); petalum superum cristatum pallide azureo-purpureum apice atropurpureum, calcari longissimo apice attenuato eleganter recurvato; ovarium haud papillosum.

A *Corydale calcicola* W. W. Smith bracteis integris anguste lanceolatis ovario non papilloso plane differt.

Rhizome very short with fasciculate, very long, distally somewhat thickened storage roots; stems 18 cm including thin tapering base, naked below, with 2 leaves. Radical leaves with petiole 10–15 cm, including a thin tapering pale underground part; lamina dark green adaxially, slightly paler abaxially, triangular in outline, to 7 × 8 cm, bipinnate, with pinnulae ± deeply divided into ovate, acute to obtuse lobes; cauline leaves like radical, but smaller. Raceme (young) rather dense, probably elongating, ca. 10-flowered; bracts lanceolate to oblanceolate, 10–16 mm, entire or lowermost with a couple of teeth; pedicels 7–8 mm, probably elongating and strongly recurved in fruit. Sepals minute; corolla pale bluish purple with dark reddish purple keels and dark tips to inner petals; outer petals crested, acute; spur of upper

petal long and slender, tapering toward apex, 18 mm with nectary 1/3 as long; inner petals 9 mm; stigma like in related species (*Corydalis calcicola*, *C. lhorongensis*); ovary without rows of small papillose hairs.

Etymology. The epithet is based on Greek “dolichos” (long) and “kentron” (spur), referring to the long, narrow, curved spur of this species.

Relationships. *Corydalis dolichocentra* is similar to *C. calcicola* W. W. Smith and *C. lhorongensis* C. Y. Wu & H. Chuang, but differs from both in long narrow entire bracts and nonpapillose fruits. The locality description is extremely broad, but judging from plant morphology it can be assumed that *C. dolichocentra* was collected in alpine screes, presumably in the higher altitudinal ranges.

IUCN Red List category. *Corydalis dolichocentra* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

20. *Corydalis jiulongensis* Z. Y. Su & Lidén, sp. nov. TYPE: China. Sichuan: Jiulong, Wuxiuhai, “in piceetis likiangenses,” 3830 m, 6 Aug. 1979, Hu Y.-N. 20545 (holotype, CDBI; isotype, CDBI).

Rhizoma parvum radicibus crassis oblongis valde longi-estipitatis; caules debiles, superne 2- ad 4-foliati, saepe ramosi; folia radicalia longissime petiolata, lamina tritermata vel sub-bi-ternata vel subbipinnata, foliolis profunde partitis, lobis lanceolatis subtus venis prominentibus; folia caulina radicalibus similia breviter petiolata. Inflorescentia elongata 9- ad 25-flora; bracteae anguste lanceolatae integrae vel parum divisaе. Sepala minutissima; corolla flava cristata acuta; petalum superum 15–17 mm longum calcari 10–12 mm longo leviter ascendenti incluso. Capsula 1- ad 4-sperma.

Rhizome small with oblong fleshy simple or rarely branched storage roots set on very long (7–15 cm) thin stalks (only stalks remaining on Hu Y.-N. 20545, CDBI). Stem very slender, 40–65 cm, with 2 to 4 leaves in upper half, simple or branched. Radical leaves very long stalked (to 30 cm); lamina to 8 × 10 cm, 2–3(–4) × ternate with narrowly obovate to narrowly lanceolate ultimate leaflets, green adaxially, glaucous abaxially with papillose-scabrid veins; cauline leaves like radical, but shortly stalked or sessile, decreasing in size upward, bipinnate, with entire to once divided leaflets; terminal pinna similar to lateral. Racemes 9- to 25-flowered, elongate; bracts narrowly lanceolate, tapering toward the often dark-tipped apex, entire or lower ones often deeply divided, (5–)10–15(–20) mm, with papillose-scabrid raised veins below; pedicels thin, 5–10 mm in anthesis, elongating to 10–15 mm and strongly reflexed in fruit.

Sepals finely dentate, ca. 1 mm; corolla yellow, sometimes with small brownish flecks laterally; outer petals acute with crest tapering toward apex; spur of upper petal 10–12 mm with nectary up to half as long, very slightly tapering, almost straight; inner petals 7 mm; lower petal rhombic-acute, 9 mm; stigma like other species in the series. Capsule 1- to 4-seeded, 10–13 × 2 mm, with ca. 3 mm style. Seeds smooth, slightly elliptic, ca. 2 mm, with small entire elaiosome.

Distribution and phenology. *Corydalis jiulongensis* is found in southwest Sichuan at 3500–3800 m, under deciduous shrubs and in forests in deep fertile soil, and is locally common. Flowering and fruiting in August, fruiting in September.

Etymology. The specific epithet *jiulongensis* indicates the geographic origin of the type collection.

Relationships. *Corydalis jiulongensis*, although clearly belonging in the series *Feddeanae* on account of its short rhizome with fasciculate storage roots, leaflets with parallel raised veins below, strongly recurved fruiting pedicels, explosive capsules, and stigma shape, is not similar to any other species. It deviates from other species in the series in the extremely long-stalked storage roots, the large triangular much-divided leaves, and in growing in shady places below trees and shrubs, whereas all other species in the group (except *C. mediterranea* Z. Y. Shu & Lidén and the blue-flowered *C. nemoralis* C. Y. Wu & H. Chuang) are alpine. Young plants that have not yet reached flowering size have shorter (2–5 cm) stalks to the storage roots.

IUCN Red List category. *Corydalis jiulongensis* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001). The species was encountered as common during the Lidén and Yu 2006 expedition in two randomly picked locations, and so may be assumed to be locally common.

Paratypes. CHINA. **Sichuan:** Jiulong, S Jigongshan, 3800 m, 7 Aug. 2006, Lidén & Yu S.-X. 65 (KUN, PE, UPS); Yanbian Xian, Zemulong Xiang, Zhongcao Cun, Gaoqiao She, Bailingshan, 13 Sep. 2002, Gao X.-F., Peng Y.-L. & Sun G. 3455 (CDBI).

21. *Corydalis mediterranea* Z. Y. Su & Lidén, sp. nov. TYPE: China. Yunnan: Luquan xian, Wumeng shan, Daheiqing, “in mixed forest of *Abies* & *Rhododendron*, with many growing on these trees or shrubs,” 3850 m, 3 July 1990, Lii Z.-W. & Fang R.-Z. 139 (holotype, KUN).

Rhizoma parvum radicibus crassis fasciculatis oblongo-fusiformibus non distincte stipitatis; caules debiles, superne

bifoliati. Folia caulina subsessilia, in foliola anguste lanceolata acuta divisa. Racemi 6- ad 8-flori; bractae anguste lanceolatae, integrae vel parce divisa; pedicellis 6–10 mm longis. Sepala minuta; corolla flava; petala exteriora subacuta ecristata, carinis et nervis fuscioribus praedita; petalum superum 12–13 mm longum, calcar 5–6 mm longo attenuato apice parum incurvato inclusio.

Glabrous herb; storage roots fasciculate, oblong, not distinctly stipitate; stems slender, to 18 cm, with 2 leaves in upper 1/3 of stem. Radical leaves unknown; leaves subsessile, deeply divided into narrowly lanceolate-acute lobes. Racemes 6- to 8-flowered, dense; bracts narrowly lanceolate, entire, or lowermost deeply cut into few acute lobes or sharp teeth; pedicels 6–10 mm. Sepals minute, dentate; corolla yellow with darker veins and keels; outer petals subacute, not or only very slightly crested; spur of upper petal 5–6 mm, with thin nectary reaching about halfway; lower petal 7 mm; inner petals 6–7 mm; ovary with 9 ovules; style ca. 2.5 mm; stigma like that of other species in the series.

Etymology. The epithet, which means “of the middle land,” is based on the Latin “medius” (middle) and “terra” (land), directly translated from Chinese “Zhong-guo.”

IUCN Red List category. *Corydalis mediterranea* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001). This species, known only from a single specimen, was searched for unsuccessfully in the type locality in 2004 by M. Lidén.

22. *Corydalis nubicola* Z. Y. Su & Lidén, sp. nov. TYPE: China. Xizang: Zogang Xian, Dongda-La, border of Markham and Zogang Xian on hwy. 318 [29°42'39"N, 98°E], scree slopes, 5100–5300 m, 25 July 2004, D. E. Boufford, J. H. Chen, S. L. Kelley, J. Li, R. H. Ree, H. Sun, J. P. Yue & Y. H. Zhang 31129 (holotype, KUN; isotype, A).

Rhizoma parvum radicibus fasciculatis crassis oblongis (25–30 × 2–3 mm) non stipitatis; caules 11–13 cm longi superne bi-foliati. Folia radicalia longe petiolata, lamina parva ca. 30 × 25 mm triangulari bipinnata, foliis subpinnato-lobatis, lobis late ovatis imbricatis; folia caulina radicalibus similia breviter petiolata. Inflorescentia densissima 19- ad 25-flora; bractae obtriangulares basi cuneatae profunde 3- ad 5-fidae, lobis incisus. Sepala parva dentata; corolla purpurea apice atropurpurea; petalum superum breviter et late cristatum, calcar brevi recurvato obtuso non attenuato; ovarium haud papillosum.

A *Corydalis calcicola* W. W. Smith et *C. trachycarpa* Maximowicz calcar brevi oblongo ovario non papilloso foliis multo minoribus differt.

Rhizome short with fasciculate oblong storage roots 25–30 × 2–3 mm; stems 11–13 cm, including

tapering mostly subterranean part below leaves; 2 leaves high up on stem, but as most of the stem is underground, leaves will be close to the ground; radical leaves with petiole 6–8 cm, mainly thin tapering pale underground part; lamina triangular-ovate, ca. 30 × 25 mm, bipinnate, with pinnulae deeply cut into broadly obovate overlapping lobes; cauline leaves like radical, but smaller. Raceme very densely 19- to 25-flowered; bracts flabellate, deeply divided into 3 to 5 segments that are again cut into oblong lobes, ca. 10 mm, or upper bracts smaller and less divided; pedicels 7–10 mm, soon slightly patent-arcuate, probably strongly recurved in fruit. Sepals ca. 1 × 2 mm, dentate; corolla bluish purple with dark reddish purple keels and dark tips to inner petals; outer petals broadly crested; spur of upper petal curved downward, not or very slightly tapering toward obtuse apex, 9–10 mm, with nectary almost half as long; inner petals 10–11 mm; stigma like in related species (e.g., *Corydalis calcicola*); ovary without rows of small papillose hairs.

Distribution and phenology. *Corydalis nubicola* grows in east Xizang in rough alpine screes at 4300–5300 m. Flowering in July.

Etymology. The specific epithet is based on Latin “nubes” (cloud) and the suffix “-cola” (dweller), referring to the high altitude of the type locality.

Relationships. *Corydalis nubicola* is closely related to *C. trachycarpa* and *C. calcicola*, but is easily distinguished by the short obtuse nontapering spur, glabrous fruits, and the much smaller, very distinctive leaves. With its dense broad racemes shortly above the scree surface, this must be a spectacular species in its native haunts. The description above refers to the type specimen. *Yang J. S. 90-203* (see below) deviates in smaller and apparently paler flowers (spur ca. 8 mm, inner petals ca. 8 mm) with longer nectary (ca. 5 mm), but has very similar leaves. It has a more deeply seated rhizome, so the thin stem and leaf bases are of course much longer.

IUCN Red List category. *Corydalis nubicola* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

Paratype. CHINA. **Xizang:** Qamdo, Zhuogela shan, stony slope, 4300 m, 1990, *Yang J.-S. 90-203* (PE).

23. *Corydalis sophronitis* Z. Y. Su & Lidén, sp. nov. TYPE: China. Sichuan: Shi-Qu, Ma-ya Gong-she, Re-bai-gou, 4000 m, 7 July 1979, *Coll. Ganzhe pref. 0211* (holotype, SCMI).

Rhizoma breve; radicibus crassis fasciculatis anguste oblongis non vel indistincte stipitatis; caules debiles 2- ad 4-

foliati. Folium radicale longe petiolatum, lamina ternata, foliolis profunde tripartitis, lobis lineari-lanceolatis ca. 20 × 2 mm; folia caulina radicalibus similia breviter petiolata. Inflorescentia multiflora elongata; bractae integrae anguste lanceolatae substipitatae, pedicellos aequantes; pedicelli fructiferi valde reflexi. Sepala parva dentata; corolla pallide flava; petala exteriora late et breviter cristata; petalum superum 12 mm longum, calcaris brevi 5–6 mm vix attenuato apice recurvato.

Glabrous herb; storage roots narrowly oblong, tapering below and above to indistinct stalk; stem 18–70 cm, ± branched. Radical leaf (only one seen) rather large; petiole 8 cm; lamina triangular in outline, ca. 5 × 5 cm, ternate with leaflets deeply tripartite into linear lobes; cauline leaves 2 to 4, shortly stalked, pinnate with (1 to)2 to 3 pair of leaflets, often lowermost leaflets divided; ultimate lobes or leaflets narrowly lanceolate, to 65 × 7 mm in shade-grown luxuriant specimens but usually smaller, with 3 rather prominent veins. Racemes 10- to 29-flowered, dense at first, soon elongating to 10–15 cm in fruiting stage; bracts entire or rarely lowermost with a tooth or lobe, narrowly lanceolate, usually with short stalk, 5–13 mm, equaling pedicels that are strongly recurved in fruit. Flowers pale yellow; sepals rounded, dentate, ca. 1 × 1.5 mm; outer petals shortly and broadly crested; spur of upper petal short, 5–6 mm, recurved, hardly tapering toward obtuse apex, with nectary ca. half as long; inner petals ca. 7 mm with claw slightly shorter than limb; lower petal 7(–8) mm, with indistinct claw, subelliptic in outline, apically with short high entire to finely undulate-dentate crest; stigma rather like other species in this series, but more delicate with less-pronounced apical papillae. Capsule 2- to 5-seeded, smooth or finely papillose along veins, oblong, ca. 9 × 2 mm, with style ca. 2.5 mm. Seed smooth, rounded, almost 2 mm.

Distribution and phenology. *Corydalis sophronitis* is known only from northwest Sichuan close to the town Serxu, at 3500–4000 m. Flowering and fruiting in July.

Etymology. The epithet is based on Greek “sophon” (shy, modest), referring to the small pale flowers and thin stems.

Relationships. *Corydalis sophronitis* is similar to *C. linearis* C. Y. Wu in its small flowers and entire, shortly stalked bracts, but differs in its narrow tapering curved spur.

IUCN Red List category. *Corydalis sophronitis* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

Paratype. CHINA. **Sichuan:** Serxu Xian N of Luoxu on rd. to Shiqu (Serxu), S of Shengbuka pass, among shrubs in remnant *Picea* forest, 3550 m, 30 July 2005, *D. E. Boufford, J. H. Chen, K. Fujikawa, S. L. Kelley, R. H. Ree, H. Sun, J. P. Yue, D. C. Zhang & Y. H. Zhang 33880* (A, KUN, UPS).

24. *Corydalis tenuipes* Lidén & Z. Y. Su, sp. nov.

TYPE: China. Xizang: Shiuden Gompa prope Ata kang La [29°25'N; 96°50'E], in praeruptis et clivis, 5000–5300 m, 3 Sep. 1933, *F. Kingdon-Ward 10812* (holotype, BM).

Rhizoma parvum radicibus crassis fasciculatis anguste fusiformibus indistincte stipitatis; caules plures debiles, superne bi vel tri-foliati, saepe ramosi. Folia radicalia longe petiolata, lamina ternata usque sub-bi-ternata vel subbipinnata, foliolis profunde tripartitis, lobis lanceolatis subtus crassimarginatis venis prominentibus; folia caulina radicalibus similia breviter petiolata. Inflorescentia 7- ad 15-flora corymbosa; bractee inferiores divisae, superiores integrae, pedicellis longissimis 15–30 mm longis breviores. Sepala parva profunde dentata; corolla flava brunneonervosa, calcaris brevi vix attenuato apice haud recurvato; crista petalorum superiorum utrinque attenuata apicem calcaris vix attingens.

Corydalis delavayi Franchet affinis sed inflorescentiis corymbosis pedicellis multo longioribus radicibus non distincte stipitatis facile distinguenda.

Glabrous herb; storage roots narrowly fusiform, gradually narrowed into short or long stalk; stems usually several, weak, 8–18 cm, simple or often branched with 2 or 3 leaves in upper half; radical leaves with petiole 4–11 cm; lamina once to twice subternately or pinnately divided; leaflets glaucous, especially abaxially, ± deeply divided into lanceolate acute lobes, often tipped with small black mucro; cauline leaves like radical, or once to twice subpinnately divided, shortly stalked. Racemes terminal and often axillary from uppermost leaf, corymbose, later elongating, 7- to 15-flowered; lower bracts divided, upper bracts entire, shorter than the slender, 15–25 (–30) mm pedicels that become arcuate-recurved in fruit. Flowers fragrant, yellow, veins and keels of outer petals dark purplish brown; sepals whitish, up to 1 mm, deeply dentate; outer petals acute, broadly crested, crest not quite reaching apex and gradually attenuate toward tip of 7–8 mm straight slightly tapering spur with thin nectary 1/3 to 2/3 as long; inner petals 6–7 mm, pale at apex; ovary broadly ellipsoid with ca. 3 mm style.

Distribution and phenology. *Corydalis tenuipes* is known from two localities in east Xizang and southwest Sichuan at 4100–5300 m, growing in wet alpine screes and disturbed sites. Flowering July and August.

Etymology. The epithet is based on Latin “tenuis” (thin, weak) and “pes” (foot), referring to the thin tapering stem base.

Relationships. *Corydalis tenuipes* is similar to *C. delavayi* in that the leaflets are not so discretely set off as in related species (i.e., the leaves are subpinnatifid rather than completely pinnate), but it is distinguished by the corymbose racemes of long-stalked flowers and the different roots. In *C. delavayi* the storage roots are cylindrical, terminating long thin stalks. The localities

of *C. tenuipes* are remarkably disjunct. In the Sichuan locality, the new species occurs together with *C. delavayi*, but the two species are morphologically and ecologically distinct with no intermediates.

IUCN Red List category. *Corydalis tenuipes* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

Paratypes. CHINA. **Xizang:** Basu, Ranwu District, Quchi to Gula, 4100 m, 14 Aug. 1973, *Qing-zang Exp. 73-1145a*. (PE p.p). **Sichuan:** Jiulong xian, Tangu Cun, 4250–4600 m, 18 June 2005, *D. E. Boufford, J. H. Chen, K. Fujikawa, S. L. Kelley, R. H. Ree, H. Sun, J. P. Yue, D. C. Zhang & Y. H. Zhang 33215* (A, KUN, UPS).

SERIES *APPENDICULATAE* C. Y. WU & H. CHUANG

Species 25 and 26 belong in series *Appendiculatae*, characterized by rather deeply seated thin rhizome with fasciculate storage roots and bulblike buds; thin unbranched stems; stems and petioles of radical leaves tapering to a thin underground base; leaves not with raised parallel veins below; corolla sky blue, rarely pink to purple; fruiting pedicels sharply recurved; and capsules explosively dehiscent.

25. *Corydalis ischnosiphon* Lidén & Z. Y. Su, sp. nov. TYPE: China. Yunnan: Zhongdian, midway from Nixiyaola to Secong, in alpine meadow and edge of bush wood, 3300 m, 7 July 1988, *Fang Z.-D. 0882* (holotype, KUN).

Rhizoma parvum radicibus fasciculatis crassis fusiformibus non distincte stipitatis; caulis 30–35 cm longus, superne bi-foliatus. Folia radicalia ternata vel sub-quinata, lobis obovatis grosse dentatis; folia caulina sessilia profunde 5- ad 7-inaequi-partita, lobis lineari-lanceolatis acutis. Inflorescentia laxa, 8- ad 13-flora; bractee lineari-lanceolatae. Sepala minutissima; corolla azurea; petalum superum haud cristatum calcaris longo gracili vix recurvato.

Fasciculate storage roots fusiform, ca. 20–25 mm, without distinct stalks; stem single (?), erect, slender, unbranched, 30–35 cm, naked below, with 2 leaves in upper half. Radical leaves with petiole 4–6 cm; lamina green adaxially, glaucous abaxially, 25–30 × 30–40 mm, ternately divided into subsessile leaflets; lateral leaflets often again deeply bifid; lobes obovate, 15–25 × 5–10 mm, coarsely toothed; cauline leaves sessile, deeply digitately cut into 5 to 7 narrowly lanceolate acute lobes, entire or with 1 or 2 long acute lateral teeth. Racemes long and lax, ca. 10 cm, 8- to 13-flowered; bracts linear-lanceolate, 10–15 mm, entire or lowest bracts with 1 or 2 long narrow basal lateral teeth or lobes; pedicels 7–16 mm, reflexed in fruit. Flowers blue; sepals minute; outer petals without crest, subacute, spur long and narrow, slightly curved, not or very slightly tapering toward

apex, ca. 11 mm, with nectary at least half as long; inner petals 7–8 mm; ovary fusiform with style ca. 3 mm; number of ovules not noted; stigma similar to that of other species in the series.

Etymology. The epithet is based on Greek “ischno-” (thin) and “siphon” (tube), referring to the long thin spur.

Relationships. *Corydalis ischnosiphon* is similar to *C. pseudobalfouriana* Lidén & Z. Y. Su in the cauline leaf shape, long racemes, narrow bracts, and recurved fruiting pedicels, and indeed was initially determined as this species, which however differs considerably in roots with distinct thin stalks, radical leaves with small rounded entire leaflets, short pedicels to 5 mm long, cristate corolla, and shorter spur to 6 mm long.

IUCN Red List category. *Corydalis ischnosiphon* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

26. *Corydalis heterothylax* C. Y. Wu ex Z. Y. Su & Lidén, sp. nov. TYPE: China. Yunnan: Hongshan N Zhongdian [28°07.633'N, 99°54.017'E], alpine slope, moist grass turf, 4300 m, 15 Aug. 2004, M. Lidén 2004: 2 (holotype, KUN; isotypes, MO, UPS).

Rhizoma parvum radicibus fasciculatis crassis fusiformibus indistincte stipitatis; caulis 7–20(–35) cm longus superne bi-foliatus. Folia radicalia parva ternata, foliolis brevistipitatis profunde divisis, lobis obovatis acutis; folia caulina subsessilia profunde bi-tri-ternato-partita, lobis linearo-lanceolatis acutis. Inflorescentia 3- ad 10-flora; bractae lanceolatae integrae vel bractea ima interdum trilobata. Sepala minutissima; corolla azurea; petalum superum late cristatum calcari oblongo vix recurvato; petalum inferum basi conspicue marsupiatum. Capsula ignota.

Fasciculae storage roots 5–15 mm, fusiform; stems 7–20(–35) cm, ± erect, unbranched, with 2 leaves in upper part. Radical leaves with petiole 2–7 cm, lamina green adaxially, glaucous abaxially, rounded-triangular in outline, 10–15 × 15 mm, ternately divided; leaflets shortly stalked, once to twice ± deeply divided into broadly obovate to lanceolate acute lobes; cauline leaves subsessile, 10–25 mm, twice to thrice deeply cut into linear-lanceolate acute lobes. Racemes 3- to 10-flowered, slightly elongating in fruit; bracts lanceolate, 4–12 mm, entire or lowermost one occasionally with a couple of narrow lateral lobes; pedicels 5–14 mm (upper ones shortest), recurved in fruit. Sepals very small; corolla sky blue with violet markings toward apices of petals (excluding crests); dorsal wings of inner petals white (as in many other blue-flowered species of *Corydalis*); outer petals broadly crested; spur

rather short and broad, almost straight, not tapering toward obtuse very slightly recurved apex, 7–10 mm, with nectary 1/2 to 2/3 as long; inner petals 7–9 mm, with dorsal crests slightly overtopping apex; lower petal dilated into broad rounded limb; claw with conspicuous pouch at the base, like a diminutive spur; ovary with 7 to 10 ovules and ca. 2.5 mm style, stigma like that of *C. appendiculata*. Mature capsule not seen; very immature capsule narrowly fusiform.

Distribution and phenology. *Corydalis heterothylax* grows in northern Yunnan and southwest Sichuan at 3600–4800 m, in the grass of alpine meadows or possibly in dry screes at the highest elevations. Flowering in July and August.

Etymology. The epithet is based on Greek “heteros” (different) and “thylax” (bag or pouch), referring to the conspicuous pouch of the lower petal. Although much smaller than the spur of the upper petal, it is still prominent enough to be noticed as a poorly balanced counterpart.

Relationships. *Corydalis heterothylax* is related to *C. appendiculata* Handel-Mazzetti, from which it is easily distinguished by the robust habit, broader and much more broadly crested outer petals, larger nectaries, a lower petal with much more pronounced gibbosity, and by the smaller radical leaves. *Corydalis heterothylax* was provisionally noted by Prof. Wu Cheng-Yih (as *C. hsiangchangensis* in PE and KUN), but was never formally described. After seeing both species alive in the Hongshan area in northern Yunnan in 2004 and noting their very different growth habits and habitats (*C. heterothylax*: alpine grass turf; *C. appendiculata*: cliffs, screes, and disturbed patches in grassland from 3000–3900 m), we have no hesitation in recognizing two species. Also, no intermediate specimens are known. The related *C. yargongensis* C. Y. Wu has very broad emarginate outer petals and narrow (if any) crests to the outer petals, and lacks the pouch on the lower petal.

IUCN Red List category. *Corydalis heterothylax* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001). The species is rather common in the type locality, and is known from several collections over a rather wide area.

Paratypes. CHINA. **Sichuan:** Daochen/Xiangcheng, Yiqu, Chaoyanggou, Huashan, 4800 m, 17 Aug. 1973, *Daocheng Exp. 3163* (CDBI); Kangding, Xingdu qiao (bridge), 3600 m, 19 July 1963, *Kuang K.-C. & Wang W.-T. 730* (PE); s. loc., s. coll. 662 (PE); Xiangcheng, Xian Haizi Lake, on rd. betw. Sandui & Litang, 4350 m, 12 July 1998, *D. E. Boufford, B. Bartholomew, C. Y. Chen, M. J. Donoghue, R. H. Ree, H. Sun & S. K. Wu 28605* (A, KUN).

SERIES *CURVIFLORAE* C. Y. WU & H. CHUANG

27. *Corydalis nematopoda* Lidén & Z. Y. Su, sp. nov. TYPE: China. Qinghai: Valley S of Baima along Makehe river [32°50'02"N; 100°50'02"E], steep hillsides with scrub cover, 3360 m, 8 July 2000, C. D. Brickell, H. Jans, J. Mitchell, H. S. Maxwell, S. Pettit, Ho T.-N., Liu S.-W., Liu X.-F. & Chen S.-L. *SQAE* (Sino-British Qinghai Alpine Garden Society Expedition) 782 (holotype, E).

Rhizoma parvum radicibus fasciculatis numerosis tenuibus; caules eramosi tenues, basin nudi valde attenuati, superne bi-tri-foliati. Folia radicalia longe petiolata, lamina rotundata ternata usque quinata, foliolis bi-tri-lobatis lobis lineare-oblongis; folia caulina radicalibus similia, profunde 3- ad 8-divisa, lobis linearibus. Racemus 5- ad 16-florus subspicatus; bractea anguste lanceolatae subobtusae 5–10 mm longae; pedicelli breves in statu fructifero valde elongati erecto-patentes. Corolla parva crenea late cristata, calcar perparvo rotundato; cristae dorsales petalorum interiorum apices superantes. Capsula pendula obovoidea.

Rhizome small with several long thin fasciculate roots; stems unbranched, slender, 18–26 cm, leafless in lower 1/3 or 1/2, above with 2 or 3 leaves. Radical leaves long stalked (5–7 cm), not withered in early fruiting stage; lamina green adaxially, glaucous abaxially, rounded, 20–30 mm broad, deeply divided into 3 to 5 leaflets that are again cut into 2 to 3 linear-oblong lobes; cauline leaves like radical, deeply cut into 3 to 8 linear lobes. Racemes 5- to 16-flowered, subspicate; bracts narrowly lanceolate, subobtuse, 5–10 mm, or lowermost much larger and occasionally divided like uppermost leaf; pedicels short in anthesis, elongating considerably to 15–20 mm and erectopatent in fruit. Sepals minute; corolla cream with brownish yellow keels; outer petals broadly crested; upper petal with short spur ca. 4 mm; lower petal 9–10 mm; inner petals 7–8 mm; dorsal crests of inner petals overtopping apex, yellow, turning brownish after pollination; stigma like that of *Corydalis cytisiflora*, but basal corners more pronounced. Capsule broadly obovoid, pendent from suberect pedicels, ca. 7 × 3.5 mm, tipped by 2.5 mm style; seeds 2 to 5, ca. 2 × 1.5 mm with short and broad elaiosome.

Etymology. The epithet is based on Greek “nema” (thread) and “pous” (foot), referring to the thin tapering bases of stems and of petioles of radical leaves.

Relationships. *Corydalis nematopoda* is placed in the series *Curviflorae*, based on the deeply seated small rhizome with fasciculate storage roots, the slender erect unbranched stems, the digitately divided cauline leaves with narrow obtuse leaflets, the small corolla with short obtuse spur, the dorsal crests of

inner petals that clearly overtop the apex, the fruiting pedicels that are erect with pendent explosively dehiscent fruits, and the peculiar stigma. It belongs in the *C. cytisiflora* complex, which is characterized by long thin storage roots, but is easily distinguished from all the other species by the short spurs (4 mm vs. 6–9 mm) and broadly obovoid (vs. linear) capsules. Furthermore, all other species in this complex except *C. cytisiflora* (Fedde) Lidén have blue flowers.

IUCN Red List category. *Corydalis nematopoda* should be classified as DD (Data Deficient) according to IUCN criteria (IUCN, 2001).

SECTION *KINGIAE* C. Y. WU & Z. Y. SU

Species 28 and 29 belong in the section *Kingiae* s.l., including section *Flaccidae* C. Y. Wu and section *Capnogorium* (Bernhardi) Endlicher sensu Wu et al. (1999), but excepting the type species *Corydalis nobilis* (L.) Persoon and *C. chingii* Fedde. The section is characterized by robust vertical rootstock crowned by a lax rosette of pinnately divided leaves, leafy stems, and oblong capsules that do not dehisce explosively. Details of stigma and seed are also peculiar to this section.

28. *Corydalis cheilosticta* Z. Y. Su & Lidén, sp. nov. TYPE: China. Qinghai: 34°33'48"N, 100°33'28"E, amongst shrubs in gully, in dry valley, 3500 m, 10 July 1997, D. Long, C. Brickell, R. McBeath, E. Strangman, R. Steele, Lu X.-F., Deng S.-R., Zhang S.-R. *SBQ* (Sino-British Qinghai exp.) 459 (holotype, E).

Herba perennis radice robusta apice squamis marcescentibus; caules ramosi 4- ad 8-foliati, foliis sursum decrescentibus; folia caulina mediana et inferiora subsessilia anguste oblongo-ovata 5-jugo-pinnata, foliolis primariis (intimis ceteris minoribus) brevipetiolatis ternatis vel subpinnatis, foliolis secundariis 2- ad 5-divisis, lobis late obovatis obtusis plerumque mucronulatis. Racemi densiflori, in statu fructifero elongati; bractea (infimae exceptae) integrae, ambitu obovato-rhombicae, basi cuneatae apice anguste acutatae, plerumque subtiliter eroso-denticulatae; bractea infimae plerumque divisae, superiores minores angustiores; pedicelli 6–7 mm longi, in statu fructifero arcuato-recurvati et ad 9–15 mm elongati. Sepala ovata usque lanceolata dentata; corolla anguste cristata crenea petalo infimo margine carmesino, calcar oblongo obtuso nectario duplo longiore. Capsula anguste oblonga 3- ad 6-seminata.

A *Corydalis straminea* Maximowicz differt foliis caulinis foliolis basalibus stipuliformibus, petalis exterioribus distincte cristatis carmesino-marginatis.

Rootstock stout, vertical, densely clothed at apex by dead petiole bases; stems rather long and slender, 25–55(–85) cm, 1.5–5 mm thick, lower 1/3 usually leafless, 4 to 8 leaves above, most of them with axillary flowering branches but lowermost ones

usually appearing later. Cauline leaves subsessile, narrowly oblong-ovate in outline, pinnate with basal pair of pinnae smaller than second pair; usually with 5 (rarely 6) pairs of pinnae; lower and middle cauline leaves 8–17 × 3–5 cm; upper cauline leaves much smaller; leaflets shortly stalked, subpinnately or ternately divided with leaflets cut into 2 to 5 broadly obovate usually mucronate lobes; radical leaves like cauline but with long petioles 4–10 cm, lamina 6–11 × 3–5 cm. Racemes 7- to 15-flowered, dense, elongating in fruit; bracts obovate-rhombic, cuneate at base, tapering to a narrowly triangular acute apex, entire or lowermost one usually divided, often slightly erose-dentate toward apex, 3–7 mm; upper bracts narrower and shorter; pedicels 6–7 mm, elongating to 9–15 mm and arcuately recurved in fruit. Sepals ovate to lanceolate, dentate, 3–4 × 1–2 mm; corolla cream with red margins to lower lip, crested; spur of upper petal 9–12 mm, hardly tapering toward obtuse apex, straight or slightly sigmoidally curved; nectary reaching halfway through spur; lower petal with narrow straight basal third, slightly saccate at middle, and with indistinctly set off limb with sharply contrasting crimson or purplish brown margins; inner petals 9–11 mm; stigma like that of *Corydalis straminea*. Capsule narrowly oblong, 15–25 mm with 2 mm style, 3- to 6-seeded, slightly constricted between seeds, at least in the dry state.

Distribution and phenology. *Corydalis cheilosticta* grows in southeast Qinghai on moist rocky slopes at 3300–3600 m. Flowering and fruiting in July.

Etymology. The epithet is based on the Greek “cheilos” (lip) and “stictos” (spotted), referring to the red margins of the lower (and occasionally upper) petal.

Relationships. *Corydalis cheilosticta* differs from the closely related *C. straminea* in its innermost pair of leaflets of cauline leaves stipule-like, obtuse leaf lobes, lower (or both) outer petal with red margin, and outer petals distinctly crested.

IUCN Red List category. *Corydalis cheilosticta* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001). It has been collected recently in a few scattered localities, and so may be assumed not to be threatened.

Paratypes. CHINA. **Qinghai:** [34°38'54"N, 100°36'32"E], mossy calcareous ledges under *Juniperus*, 3585 m, 10 July 1977, *D. Long, C. Brickell, R. McBeath, E. Strangman, R. Steele, Lu X.-F., Deng S.-R., Zhang S.-R SBQ 488* (E); [34°36'N, 100°33'E], rocky banks by stream, 3550 m, 10 July 1977, *D. Long, C. Brickell, R. McBeath, E. Strangman, R. Steele, Lu X.-F., Deng S.-R., Zhang S.-R SBQ 504* (E); [34°29'1"N, 101°8'32"E], steep rocky sides of river gorge, 3340 m, 16 July 1997, *D. Long, C. Brickell, R.*

McBeath, E. Strangman, R. Steele, Lu X.-F., Deng S.-R., Zhang S.-R SBQ 741 (E).

The description above pertains only to *Corydalis cheilosticta* subsp. *cheilosticta* and only those details that contrast are provided in the diagnosis of subspecies *borealis* below:

28a. *Corydalis cheilosticta* subsp. *borealis* Lidén & Z. Y. Su, subsp. nov. TYPE: China. Gansu: in montibus Richthofen (Nan shan), Hung-Shui-Pa-Shang-Ho, 4000 m, 20 July 1931, *Friis-Johansen 2700* (holotype, S).

Petalis exterioribus latioribus obscureo-purpureis a subsp. *cheilosticta* differt.

Distribution and phenology. *Corydalis cheilosticta* subsp. *borealis* grows in eastern Qinghai and neighboring Gansu at 3500–4000 m on rocky hillsides. Flowering in July.

Relationships. The new subspecies differs from *Corydalis cheilosticta* subsp. *cheilosticta* in its broader outer petals that are “muddy pink-purple” (in sched., *SBQ 291*, E). Because there are other species in the genus in which flower color is variable, there are no vegetative differences, and the two types are geographically vicariant, we find subspecific level appropriate.

IUCN Red List category. *Corydalis cheilosticta* subsp. *borealis* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001). It has been collected recently in a few scattered localities, and so may be assumed not to be threatened.

Paratypes. CHINA. **Gansu:** in montibus Richthofen (Nan shan), Hung-Shui-Pa-Shang-Ho, 4000 m, 20 July 1931, *Friis-Johansen 2633* (S). **Qinghai:** Maqen, N Dawu (Maqen), near powerstation, Jiang ran valley, 3500 m, 7 July 1997, *D. Long, C. Brickell, R. McBeath, E. Strangman, R. Steele, Lu X.-F., Deng S.-R., Zhang S.-R. SBQ (Sino-British Qinghai exp.) 291* (E).

29. *Corydalis lophophora* Lidén & Z. Y. Su, sp. nov. TYPE: China. Qinghai: Maqen xian, Xueshan, along Qiemuque He, [34°43'0"N, 99°41'13"E], rocky cliff, 3800 m, 27 July 1993, *Ho T.-N., B. Bartholomew & M. Gilbert 376* (holotype, PE; isotype, E).

Herba perennis radice robusta apice squamis marcescentibus; caules plures 4- ad 5-foliosi, foliis sursum decrescentibus; folia radicalia longepetiolata, ambitu triangularia sub-bipinnata, foliolis primariis petiolatis, secundariis sub-biternato-lobatis vel ternatolobatis lobis obovatis; folia caulina subsessilia oblongo-ovata 2–3(–4)-jugo-pinnata, foliolis (pari infimo minore distanti stipulas mentientii) subpinnatifidis, lobis late obovatis obtusis. Racemi 9- ad 15-flori subsecundi densiusculi, in statu fructifero elongati; bracteae integrae ambitu obovato-rhombicae, basi cuneate

vel brevissime petiolatae apice acuminatae; bractea infima plerumque divisa, superiores minores angustiores; pedicelli 7–8 mm longi, in statu fructifero arcuato-recurvati usque ad 12 mm elongati. Sepala magna ovata lacerato-dentata, nervo medio prolongato; corolla purpurea vel purpurascens late et breviter cristata, calcaris oblongo obtuso nectario duplo longiore. Capsula ignota.

Corydalis cheilostictae Z. Y. Su & Lidén similis, sed caulibus brevioribus foliis caulinis pari foliolorum basali ex ceteris manifeste distant, sepalis majoribus petalis exterioribus late cristatis non carmesino-marginatis distat. A *C. praecipitorum* C. Y. Wu, Z. Y. Su & Lidén et *C. crista-galli* Maximowicz differt caulibus plurifoliatis foliis radicalibus magis divisa sepalis majoribus magis divisus et praetera a priore calcaris longiore crista latiore.

Rootstock stout, crowned by remnants of petioles; stems several, 20–30 cm, with 4 or 5 leaves, with axillary racemes from uppermost leaves. Radical leaves 14–25 cm, including petiole 7–8 cm, triangular in outline, sub-bipinnate; basal primary leaflets rather long stalked, upper ones short stalked; leaflets ternately cut to ca. 2/3 into obovate lobes that are often again shallowly 2- to 3-fid; cauline leaves simply pinnate, subsessile, usually with lowermost pair of pinnae small, distant from the other and stipular in appearance; leaflets ovate in outline, shallowly subpinnatifid into broad obtuse lobes. Racemes subsecund, 9- to 15-flowered, rather dense, elongating in fruit; often axillary (leafless) racemes are produced from uppermost leaves; bracts obovate-rhombic, entire, cuneate at base or with rather distinct stalk, acuminate at apex, ca. 5–7 mm, or upper ones smaller and narrower; lowermost bract occasionally larger and slightly divided; pedicels 7–8 mm, elongating to 12 mm and arcuate-recurved in fruit. Sepals large, 5–8 × 3–4 mm, lacerate-dentate, often with midvein prolonged into a little tail; corolla “pink and white” (in sched., *Ho et al.* 593, PE) “purple to lilac, tube and margins of lower lip darker” (in sched., *SBQ* 371, PE), “dull pink with white lower lip” (in sched., *Ho et al.* 376, PE); outer petals with high and short crests; spur 10–13 mm, not tapering toward the obtuse slightly downcurved apex; nectary about half as long as spur; lower petal broadly saccate (except for the very base), broadly subacute; inner petals 10–12 mm, darker at apex.

Distribution and phenology. *Corydalis lophophora* grows in Qinghai on rocky cliffs at 2600–3800 m. Flowering in June and July.

Etymology. The epithet is based on Greek “lopho” (crest) and “-phorum” (carrier), referring to the prominent crests of the outer petals.

Relationships. *Corydalis lophophora* differs from *C. cheilosticta* by its shorter stems without axillary leafy branches, comparatively larger radical leaves that are triangular in outline, and quite different flowers. It further differs from *C. praecipitorum* by its more leafy stems, broader and more divided radical leaves, and flowers with considerably larger and more divided sepals, longer spur, and broader crests. *Corydalis crista-galli* is similar in the broadly crested flowers, but has very different leaves, smaller sepals, and the lower petal has a contrasting purple blotch across the crest and apex.

IUCN Red List category. *Corydalis lophophora* should be classified as LC (Least Concern) according to IUCN criteria (IUCN, 2001). It has been collected recently in a few scattered localities, and so may be assumed not to be threatened.

Paratypes. CHINA. **Qinghai:** [34°47'40"N, 99°45'1"E], 3630 m, 9 June 1997, *D. Long, C. Brickell, R. McBeath, E. Strangman, R. Steele, Lu X.-F., Deng S.-R., Zhang S.-R. SBQ (Sino-British Qinghai exp.)* 371 (E); Maqen xian, Dawu Xiang, EHEMA along Gequ He, river valley, 3600 m, 31 July 1993, *Ho T.-N., B. Bartholomew & M. Gilbert* 593 (PE); Maqen, 2600–2700 m, 12 June 1981, *Huang R.-F. CG81-0028* (BM, HNWP).

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