

10. ACONITUM Linnaeus, Sp. Pl. 1: 532. 1753.

乌头属 wu tou shu

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Herbs perennial or pseudoannual, rarely annual, with taproots or 2 to several caudices. Stem erect or twining. Leaves simple or compound, cauline ones alternate, sometimes all basal, palmately divided, rarely undivided. Inflorescence usually racemose. Pedicel with 2 bracteoles. Flowers bisexual, zygomorphic. Sepals 5, petaloid, purple, blue, or yellow; lower sepals 2, narrowly lanceolate or oblong, small; lateral sepals 2, suborbicular; upper sepal falcate, navicular, galeate to cylindrical. Petals 2, clawed; limb usually with lip and spur, secretory tissue usually at limb apex, rarely abaxial. Staminodes usually absent. Stamens numerous; anthers ellipsoid-globose. Carpels 3–5(–13); style short, persistent.

About 400 species: temperate regions of the N hemisphere; 211 species (166 endemic) in China.

Key 1

- 1a. Herbs annual, with taproots; sepals clawed; petaline lip flabellate (3. *A.* subgen. *Gymnaconitum*) 211. *A. gymnandrum*
- 1b. Herbs perennial, with rhizomes or pseudoannual with caudices; sepals not or nearly clawless; petaline lip not flabellate.
 - 2a. Herbs perennial, with rhizomes (1. *A.* subgen. *Lycoctonum*) Key 2
 - 2b. Herbs pseudoannual, with caudices (2. *A.* subgen. *Aconitum*) Key 3

Key 2

- 1a. Inflorescence a 1-flowered scape; upper sepal navicular, petaline limb very small, lip and spur indistinct; carpels 6–8 22. *A. fletcherianum*
- 1b. Inflorescence usually racemose, many flowered; upper sepal cylindrical or high galeate; petals with distinct lip and spur; carpels 3.
 - 2a. Stem twining.
 - 3a. Inflorescence rachis retrorse and appressed pubescent 11. *A. finetianum*
 - 3b. Inflorescence rachis spreading pubescent 12. *A. alboviolaceum*
 - 2b. Stem erect.
 - 4a. Upper sepal high galeate or subcylindrical, 6–10 mm high, broader than high.
 - 5a. Stem retrorse and spreading hispid, to 65 cm tall, ca. 4 mm in diam.; sepals blue-purple, upper sepal subcylindrical 1. *A. chrysotrichum*
 - 5b. Stem retrorse pubescent or subglabrous, 100–200 cm tall, more than 8 mm in diam.; upper sepal galeate or high galeate.
 - 6a. Stem to 200 cm tall, ca. 1.5 cm in diam.; leaf blade to 25 cm wide; petals not spurred; sepals yellowish or white 3. *A. apetalum*
 - 6b. Stem to 100 cm tall, ca. 1 cm in diam.; leaf blade to 10 cm wide; petals shortly spurred; sepals pale purple 2. *A. novoluridum*
 - 4b. Upper sepal cylindrical, more than 13 mm high, higher than broad.
 - 7a. Leaf blade ternate 21. *A. barbatum*
 - 7b. Leaf blade deeply to medially 3-lobed.
 - 8a. Stem scapose to subscapose; pedicel with 2 bracteoles at base.
 - 9a. Pedicels (except lowermost pedicels of inflorescence) 1.5–7 mm.
 - 10a. Upper sepal 1.3–1.5 cm high; petaline spur ca. 1 mm 4. *A. brevicaratum*
 - 10b. Upper sepal ca. 1.1 cm high; petaline spur ca. 4 mm 5. *A. kialaense*
 - 9b. Pedicels of basal part of inflorescence 5–20 mm or longer.
 - 11a. Distal pedicels 5–12 mm; bracteoles linear; petaline spur nearly equal to lip in length.
 - 12a. Pedicels spreading pubescent; flowers dark purplish blue to violet or pink, sometimes yellowish white; petaline spur circinate 8. *A. crassiflorum*
 - 12b. Pedicels appressed pubescent; flowers dull yellow; petaline spur gently incurved 10. *A. rilongense*
 - 11b. Distal pedicels 14–20 mm; bracteoles narrowly ovate; petaline spur 2–3 × longer than lip.
 - 13a. Pedicels appressed pubescent; leaf blade 3-parted nearly to base 7. *A. cavaleriei*

- 13b. Pedicels spreading pubescent; leaf blade 3-parted to or slightly beyond middle 6. *A. scaposum*
- 8b. Stem leafy; pedicel with 2 bracteoles above base.
 - 14a. Lower pedicels less than 1 cm 9. *A. longecassidatum*
 - 14b. Lower pedicels more than 1.2 cm.
 - 15a. Sepals yellow.
 - 16a. Inflorescence spreading pubescent 17. *A. monticola*
 - 16b. Inflorescence appressed pubescent.
 - 17a. Stem sparsely retrorse pubescent basally; petaline spur subspirally incurved or circinate 18. *A. umbrosum*
 - 17b. Stem and petioles spreading pubescent, sometimes with intermixed retrorse hairs; petaline spur erect, slightly curved or spirally curved.
 - 18a. Upper sepal 1–1.3 cm high; petaline spur spirally incurved 19. *A. ranunculoides*
 - 18b. Upper sepal 1.5–2 cm high; petaline spur erect or slightly incurved 20. *A. kirinense*
 - 15b. Sepals blue-purple.
 - 19a. Inflorescence usually retrorse and appressed pubescent 14. *A. sinomontanum*
 - 19b. Inflorescence spreading pubescent.
 - 20a. Leaf blade abaxially with straight hairs, hairs 0.8–1.2 mm 16. *A. septentrionale*
 - 20b. Leaf blade abaxially with slightly crisped hairs, hairs 0.2–0.5 mm.
 - 21a. Leaf lobes shallowly divided, acute or shortly acuminate at apex, ultimate lobules triangular, acute at apex 13. *A. wardii*
 - 21b. Leaf lobes deeply divided, long acuminate at apex, ultimate lobules narrowly triangular, sharp at apex 15. *A. leucostomum*

Key 3

- 1a. Petaline limb obscure, with a hammer-shaped spur and minute lip; carpels 7–9 210. *A. polycarpum*
- 1b. Petaline limb distinct, with a short or long spur and distinct lip; carpels usually 3–5.
 - 2a. Stem erect, ascending, reclining, or trailing, not twining.
 - 3a. Stem leafy, not scapose.
 - 4a. Leaf blade palmately divided Key 4
 - 4b. Leaf blade undivided 105. *A. rhombifolium*
 - 3b. Stem scapose to subscapose.
 - 5a. Leaf blade larger, 7–20(–30) cm wide.
 - 6a. Leaf lobes subdivided, ultimate lobules narrowly lanceolate to linear 39. *A. duclouxii*
 - 6b. Leaf lobes less divided, ultimate lobules triangular to lanceolate or broadly lanceolate.
 - 7a. Pedicels spreading pubescent; leaf lobes contiguous or slightly overlapping 37. *A. coriophyllum*
 - 7b. Pedicels appressed pubescent; leaf lobes separate 38. *A. nagarum*
 - 5b. Leaf blade smaller, less than 7 cm wide.
 - 8a. Leaf blade deeply 3-lobed near to base.
 - 9a. Stem, pedicels, and sepals abaxially glabrous; upper sepal galeate, with a long beak 149. *A. monanthum*
 - 9b. Stem, pedicels, and sepals abaxially pubescent; upper sepal navicular or falcate-navicular.
 - 10a. Cauline leaves 6–9; upper sepal falcate-navicular.
 - 11a. Inflorescence 3–10-flowered; pedicels to 5 cm; carpels glabrous 36. *A. sinchiangense*
 - 11b. Inflorescence ca. 20-flowered; pedicels to 3 cm; carpels pubescent 178. *A. handelianum*
 - 10b. Cauline leaves 1 or 2; upper sepal navicular.
 - 12a. Petaline limb with both lip and spur 34. *A. pulchellum*
 - 12b. Petaline limb strongly reduced to a small hooklike structure, without lip and spur 35. *A. hamatipetalum*
 - 8b. Leaf blade medially 3-lobed.
 - 13a. Petaline lip divided into 2 linear lobes 28. *A. rotundifolium*
 - 13b. Petaline lip divided into 2 ± orbicular lobes.
 - 14a. Petaline spur erect.
 - 15a. Bracteoles linear, undivided 26. *A. naviculare*
 - 15b. Bracteoles 3-fid 27. *A. creagromorphum*
 - 14b. Petaline spur slightly incurved.
 - 16a. Inflorescence retrorse pubescent.
 - 17a. Bracts leaflike; bracteoles 3-fid; petals pubescent, distinctly spurred, lip tongue-like, distinct 30. *A. longipetiolatum*

- 17b. Bracts linear; bracteoles linear, entire; petals glabrous, with slightly incurved or cup-shaped spur, lip distinct or not.
- 18a. Petaline spur slightly incurved, lip indistinct, claw straight at spur apex 23. *A. tanguticum*
- 18b. Petaline spur cup-shaped, lip short but distinct, claw straight or coiled at spur apex.
- 19a. Petaline claw strongly coiled at apex, lip entire, projecting forward 25. *A. spiripetalum*
- 19b. Petaline claw slightly incurved at apex, lip 2-lobed, reflexed 24. *A. qinghaiense*
- 16b. Inflorescence spreading pubescent.
- 20a. Inflorescence racemose, 2–5-flowered; leaf blade to 5 cm wide; upper sepal navicular-conical to conical 29. *A. changianum*
- 20b. Inflorescence corymbose, 1–3-flowered; leaf blade usually to 3 cm wide (*A. ichangense* to 5.4 cm); upper sepal navicular to navicular-conical.
- 21a. Bracteoles narrowly elliptic; carpels 3 31. *A. ichangense*
- 21b. Bracteoles subulate; carpels 5.
- 22a. Sepals yellow to greenish white; leaf lobes shallowly lobed 32. *A. iochanicum*
- 22b. Sepals blue-purple; leaf lobes deeply lobed.
- 23a. Flowers larger, upper sepal 2–2.5 cm from base to beak 33. *A. alpinonepalense*
- 23b. Flowers smaller, upper sepal to 1.5 cm from base to beak 34. *A. pulchellum*
- 2b. Stem twining.
- 24a. Pedicels spreading pubescent.
- 25a. Leaf blade deeply 3-lobed to 2–3.3 mm from base, lobes ± dissected, lobules narrowly lanceolate to linear-lanceolate.
- 26a. Sepals white, upper sepal galeate, ca. 1.5 cm high; bracteoles villous; carpels 3 108. *A. weixiense*
- 26b. Sepals blue-purple, upper sepal high galeate, 1.7–1.8 cm high; bracteoles glabrous; carpels 5 121. *A. episcopale*
- 25b. Leaf blade medially to shallowly 3-lobed; segment undivided or lobed, rarely dissected (*A. volubile*).
- 27a. Leaf central segment undivided or indistinctly 3-lobed, margin coarsely dentate 126. *A. cannabifolium*
- 27b. Leaf central segment 3-lobed or pinnatisect.
- 28a. Stem spreading pilose; petals pubescent; carpels glabrous 125. *A. shensiense*
- 28b. Stem glabrous or sparsely retrorse pubescent; petals glabrous; ovary pubescent.
- 29a. Rhizome connecting caudices shorter than 5 mm; central leaf segment 3-lobed, ultimate lobules triangular 128. *A. sczukinii*
- 29b. Rhizome connecting caudices up to 6 cm; central leaf segment subpinnately parted, ultimate lobules lanceolate to linear 129. *A. volubile*
- 24b. Pedicels retrorse and appressed pubescent or glabrous.
- 30a. Bracteoles elliptic, obovate, spatulate, to leaflike and palmately lobed.
- 31a. Stem bulbiferous; bracteoles palmately lobed; petaline spur ca. 10 mm 111. *A. bulbiferum*
- 31b. Stem not bulbiferous; bracteoles entire; petaline spur 1.5–3 mm.
- 32a. Leaf blade deeply 3-lobed less than 5 mm from base 90. *A. contortum*
- 32b. Leaf blade medially 3-lobed more than 5 mm from base.
- 33a. Leaf blade 3-parted to more than 1 cm from base, central lobe 3-lobed 107. *A. refractarpum*
- 33b. Leaf blade 3-parted to 5–7 mm from base, central lobe pinnatisect 110. *A. tsaii*
- 30b. Bracteoles linear to subulate, entire.
- 34a. Leaf blade deeply 3-lobed less than 5 mm from base.
- 35a. Leaf central segment undivided, bluntly dentate at margin, lanceolate or rhombic-lanceolate 127. *A. henryi*
- 35b. Leaf central segment lobed or parted, rhombic or broadly rhombic.
- 36a. Leaf central segment broadly rhombic, acute at apex 117. *A. vilmorinianum*
- 36b. Leaf central segment rhombic, acuminate or long acuminate at apex.
- 37a. Leaf segments dissected; ultimate lobules lanceolate to linear 129. *A. volubile*
- 37b. Leaf segments lobed; ultimate lobules ovate or triangular.
- 38a. Upper sepal galeate, with a distinct beak; petals and carpels pubescent 123. *A. lioui*
- 38b. Upper sepal high galeate, with an indistinct beak; petals and carpels glabrous 124. *A. sunpanense*
- 34b. Leaf blade medially 3-lobed more than 5 mm from base.
- 39a. Leaf blade parted to more than 6 mm above base.
- 40a. Upper sepal high galeate.
- 41a. Leaf blade 3-parted slightly beyond middle, central lobe ovate-rhombic or trapezoid-rhombic, indistinctly 3-lobed; pedicels appressed pubescent or glabrous 106. *A. hemsleyanum*

- 41b. Leaf blade 3-parted nearly to base, central lobe rhombic, 3-parted or subpinnately divided; pedicels densely retrorse pubescent 116. *A. austroyunnanense*
- 40b. Upper sepal galeate.
 - 42a. Leaf central lobe ovate-rhombic or trapezoid, nearly undivided, several dentate above middle 109. *A. crassicaule*
 - 42b. Leaf central lobe broadly ovate-rhombic, pinnately divided.
 - 43a. Inflorescence rachis sparsely retrorse pubescent; petals sparsely pubescent; leaf blade leathery 119. *A. validinerve*
 - 43b. Inflorescence rachis glabrous; petals glabrous; leaf blade membranous.
 - 44a. Leaf central lobe cuneate-rhombic, narrowly cuneate at base; petaline claw geniculate at apex 115. *A. longilobum*
 - 44b. Leaf central lobe rhombic, broadly cuneate at base; petaline claw not geniculate 118. *A. pseudostapfianum*
- 39b. Leaf blade parted to 1.5–5 mm from base.
 - 45a. Upper sepal high galeate.
 - 46a. Leaf lobes lobed, ultimate lobules triangular or narrowly triangular 116. *A. austroyunnanense*
 - 46b. Leaf lobes parted, ultimate lobules sublinear.
 - 47a. Carpels glabrous; inflorescence 2–4-flowered 114. *A. elwesii*
 - 47b. Carpels sparsely appressed pubescent; inflorescence 10–16-flowered 122. *A. campylorrhynchum*
 - 45b. Upper sepal galeate to conical or hemispheric.
 - 48a. Pedicels and sepals abaxially glabrous 120. *A. stapfianum*
 - 48b. Pedicels and sepals abaxially pubescent.
 - 49a. Upper sepal with a beak ca. 5 mm, usually curved upward 122. *A. campylorrhynchum*
 - 49b. Upper sepal with a beak ca. 0.5 mm, straight or curved downward.
 - 50a. Petaline claw not geniculate at apex; pedicels 7–26 mm; leaf central lobe 3-lobed below middle 113. *A. chuanum*
 - 50b. Petaline claw geniculate at apex; pedicels 22–70 mm; leaf central lobe 3-parted beyond middle 112. *A. habaense*

Key 4

- 1a. Leaf blade medially to shallowly 3-lobed, lobes usually dissected.
 - 2a. Central lobe of middle cauline leaves undivided or indistinctly 3-lobed, lateral lobes undivided or unequally 2-lobed, distal leaves undivided, rhombic-ovate; upper sepal subcylindric 104. *A. racemulosum*
 - 2b. Central and lateral lobes of cauline leaves distinctly divided; upper sepal high galeate or galeate to falcate.
 - 3a. Lateral sepals 6.5–8.5 mm in diam.
 - 4a. Flower solitary, axillary; bracteoles leaflike, 1.5–1.8 cm; upper sepal navicular-conical 46. *A. sinoaxillare*
 - 4b. Flowers in an inflorescence; bracteoles linear to lanceolate-linear, or subulate, 1.5–4 mm; upper sepal falcate-navicular or conical.
 - 5a. Inflorescence ca. 5 cm, 4-flowered; petals shortly spurred, claw geniculate at apex; leaf central lobe rhombic 48. *A. milinense*
 - 5b. Inflorescence 14–50 cm, 15–30-flowered; petals not spurred, claw not geniculate at apex; leaf central lobe rhombic-obovate to truncate-rhombic.
 - 6a. Stem ca. 50 cm tall; leaf blade 3.2–3.5 × 5–7 cm; upper sepal navicular, not contracted 49. *A. brunneum*
 - 6b. Stem 85–100 cm tall; leaf blade 3.8–6 × 6.5–11 cm; upper sepal galeate, contracted 50. *A. pseudobrunneum*
 - 3b. Lateral sepals more than 10 cm.
 - 7a. Inflorescence rachis, and pedicels glabrous or only rachis retrorse pubescent.
 - 8a. Inflorescence rachis retrorse pubescent; pedicels and carpels glabrous 59. *A. shimianense*
 - 8b. Inflorescence rachis, pedicels, and carpels glabrous or pedicels nearly glabrous in *A. fanjingshanicum*, slightly spreading pubescent at apex.
 - 9a. Bracteoles leaflike, 3-lobed 58. *A. pukeense*
 - 9b. Bracteoles entire.
 - 10a. Bracteoles narrowly obovate or spatulate 52. *A. spathulatum*
 - 10b. Bracteoles linear, elliptic, or subulate.
 - 11a. Stem trailing distally, distally S-curved; inflorescence unequally bifurcate-branched 130. *A. fischeri*
 - 11b. Stem erect, distally not S-curved; inflorescence not bifurcate-branched.

- 12a. Bracteoles adaxially pubescent and ciliate; pedicels nearly glabrous 92. *A. fanjingshanicum*
 12b. Bracteoles and pedicels glabrous.
 13a. Petaline claw geniculate at apex.
 14a. Bracteoles at middle of pedicels, linear, 3.5–4.5 mm 53. *A. geniculatum*
 14b. Bracteoles contiguous with flower, leaflike, 1–3.5 cm 55. *A. magnibracteolatum*
 13b. Petaline claw not geniculate at apex.
 15a. Upper sepal navicular, 2.5–3 cm from base to beak 70. *A. yunlingense*
 15b. Upper sepal galeate to high galeate, less than 2.1 cm from base to beak.
 16a. Leaf blade adaxially appressed pubescent, abaxially sparsely pubescent at veins, petioles sparsely spreading pubescent 54. *A. luningense*
 16b. Leaf blade adaxially sparsely pubescent, glabrous, or sparsely retrorse pubescent, abaxially and petioles glabrous.
 17a. Upper sepal high galeate, lower margin straight 91. *A. lonchodontum*
 17b. Upper sepal galeate to conical, lower margin oblique.
 18a. Leaf blade leathery; lobes usually slightly overlapping; carpels 3 . 68. *A. coriaceifolium*
 18b. Leaf blade membranous; lobes separate; carpels 5.
 19a. Leaf blade 9–11 × 13–18 cm; petaline spur incurved, ca. 1.8 mm; carpels 5 51. *A. bulleyanum*
 19b. Leaf blade ca. 2.7 × 4.5 cm; petaline spur circinate, ca. 7 mm; carpels 4 79. *A. namlaense*
 7b. Inflorescence rachis and pedicels pubescent, in *A. shimianense* pedicels glabrous and in *A. lihsienense* rachis glabrous.
 20a. Inflorescence rachis and pedicels retrorse pubescent, in *A. shimianense* pedicels glabrous.
 21a. Pedicels glabrous 59. *A. shimianense*
 21b. Pedicels retrorse pubescent.
 22a. Upper sepal high galeate or subcylindric.
 23a. Bracteoles of lower pedicels leaflike; petaline spur sparsely pubescent 152. *A. jiulongense*
 23b. Bracteoles not leaflike; petaline spur usually glabrous.
 24a. Leaf central lobe narrowly rhombic, narrowly cuneate at base; upper sepal subcylindric; filaments puberulous 130. *A. fischeri*
 24b. Leaf central lobe rhombic, broadly cuneate at base; upper sepal high galeate; filaments glabrous.
 25a. Bracteoles sparsely pubescent; carpels 3, densely appressed pubescent 56. *A. yangii*
 25b. Bracteoles glabrous; carpels 3(–5), pubescent.
 26a. Leaf lobules slightly obtuse at apex; inflorescence loosely ca. 10-flowered; upper sepal with beak to 7 mm 57. *A. georgei*
 26b. Leaf lobules acute at apex; inflorescence densely many flowered; upper sepal with indistinct beak 1–2 mm 135. *A. carmichaelii*
 22b. Upper sepal navicular to galeate.
 27a. Upper sepal navicular.
 28a. Pedicels ascending at an obtuse angle; upper sepal broadest above middle, ca. 2.5 cm from base to beak, lower margin straight 77. *A. brevilibum*
 28b. Pedicels erect or ascending at an acute angle; upper sepal broadest at middle, ca. 1.9 cm from base to beak, lower margin concave 96. *A. longipedicellatum*
 27b. Upper sepal galeate.
 29a. Inflorescence corymbose, 2–4-flowered 93. *A. taipeicum*
 29b. Inflorescence racemose or paniculate, usually many flowered.
 30a. Pedicels incurved above 87. *A. pendulicarpum*
 30b. Pedicels ascending at an obtuse angle.
 31a. Sepals yellowish; bracteoles pubescent; petaline spur circinate 85. *A. alboflavidum*
 31b. Sepals blue; bracteoles glabrous; petaline spur not circinate.
 32a. Stem 40–50 cm tall; central leaf lobe slightly obtuse at apex; inflorescence 4- or 5-flowered; upper sepal ca. 1.4 cm from base to beak 78. *A. chiachaense*
 32b. Stem 100–120 cm tall; central leaf lobe acuminate or long acuminate at apex; inflorescence 2–10-flowered; upper sepal 1.9–2.3 cm from base to beak.
 33a. Upper sepal abaxially and carpels pubescent 94. *A. transsectum*
 33b. Upper sepal abaxially and carpels glabrous.

- 34a. Leaf blade nearly glabrous or sparsely pubescent on both surfaces; bracteoles of lower pedicels 3-lobed; petals glabrous 64. *A. franchetii*
- 34b. Leaf blade adaxially sparsely appressed puberulous, abaxially retrorse puberulous at veins; bracteoles linear; petals sparsely pubescent 83. *A. lobulatum*
- 20b. Pedicels spreading pubescent.
- 35a. Upper sepal yellow or green-tinged.
- 36a. Inflorescence rachis glabrous; pedicels spreading white pubescent 84. *A. stramineiflorum*
- 36b. Inflorescence rachis densely spreading yellow pubescent.
- 37a. Bracteoles proximally on pedicels; upper sepal navicular-galeate or galeate; carpels densely pubescent; stem 25–70 cm tall 80. *A. souliei*
- 37b. Bracteoles distally on pedicels; upper sepal navicular; carpels glabrous; stem ca. 30 cm tall 82. *A. phyllostegium*
- 35b. Upper sepal blue-purple, rarely white.
- 38a. Upper sepal navicular or navicular-galeate.
- 39a. Bracteoles leaflike, 3-parted.
- 40a. Petals and carpels glabrous; petaline claw geniculate at apex 60. *A. pomeense*
- 40b. Petals and carpels pubescent; petaline claw not geniculate at apex.
- 41a. Lower pedicels 6–12 cm; upper sepal abaxially nearly glabrous, with a beak, lateral sepals 1.7–2.3 cm 69. *A. stylosum*
- 41b. Lower pedicels 2.5–6.5 cm; upper sepal abaxially densely pubescent; lateral sepals 1.5–1.7 cm with blunt beak 63. *A. nielamuense*
- 39b. Bracteoles undivided, oblong, oblanceolate, linear, or subulate.
- 42a. Pedicels incurved; sepals abaxially and carpels both glabrous.
- 43a. Stem erect, long branched; branches to 18 cm; central leaf lobe acuminate; petals glabrous, claw geniculate at apex 86. *A. nutantiflorum*
- 43b. Stem trailing, branched; branches to 35 cm; central leaf lobe caudate-acuminate; petals pubescent, claw not geniculate at apex 103. *A. longiramosum*
- 42b. Pedicels straight; sepals abaxially or at margin and carpels all pubescent.
- 44a. Stem 30–35 cm tall; leaf blade adaxially glabrous, abaxially pubescent at veins 81. *A. parcifolium*
- 44b. Stem taller than 70 cm; leaf blade pubescent on both surfaces or abaxially subglabrous.
- 45a. Stem and inflorescence rachis glabrous 95. *A. lihsienense*
- 45b. Stem and inflorescence rachis pubescent.
- 46a. Inflorescence ca. 7-flowered, rachis white pubescent; upper sepal ca. 2.5 cm from base to beak 71. *A. styloides*
- 46b. Inflorescence densely many flowered, rachis yellow pubescent; upper sepal 1.2–2.1 cm.
- 47a. Petals glabrous; carpels 5; petioles 3–7 cm; upper sepal ca. 1.2 cm from base to beak 73. *A. kungshanense*
- 47b. Petals sparsely pubescent; carpels 3; petioles 7–15 cm; upper sepal ca. 2.1 cm from base to beak 66. *A. lycocotonifolium*
- 38b. Upper sepal galeate or high galeate.
- 48a. Upper sepal high galeate 151. *A. piepunense*
- 48b. Upper sepal galeate.
- 49a. Middle cauline leaf shortly petiolate, upper ones sessile 67. *A. forrestii*
- 49b. Middle cauline leaf with petioles nearly as long as leaf blade.
- 50a. Filaments pubescent.
- 51a. Leaf central lobe rhombic or broadly rhombic, lobed, acute or shortly acuminate at apex; petaline claw sparsely puberulous 76. *A. spicatum*
- 51b. Leaf central lobe narrowly rhombic or rhombic, parted, acuminate or long acuminate at apex; petaline claw densely pubescent.
- 52a. Bracteoles proximally on pedicels, linear or linear-subulate; stem 60–170 cm tall, inflorescence 7–30-flowered 74. *A. tatsienense*

- 52b. Bracteoles contiguous with flower, leaflike or narrowly elliptic; stem 32–42 cm tall; inflorescence 3–5-flowered 65. *A. secundiflorum*
- 50b. Filaments glabrous.
- 53a. Carpels densely glabrous.
- 54a. Inflorescence rachis apically and pedicels densely spreading white pubescent 89. *A. dolichorhynchum*
- 54b. Inflorescence rachis and pedicels spreading yellowish or spreading yellow pubescent (in *A. rockii* appressed pubescent).
- 55a. Inflorescence rachis and pedicels spreading pubescent; upper sepal 2.5–3 cm from base to beak 75. *A. elliotii*
- 55b. Inflorescence rachis and pedicels both spreading and appressed pubescent; upper sepal to 2 cm from base to beak 88. *A. rockii*
- 53b. Carpels densely pubescent.
- 56a. Bracteoles leaflike.
- 57a. Stem and inflorescence rachis and pedicels densely yellowish pubescent; leaf central lobe rhombic, acuminate at apex; leaf blade pubescent on both surfaces; sepals white 61. *A. yachiangense*
- 57b. Stem apically and inflorescence rachis glabrous, pedicels whitish pubescent; leaf central lobe broadly rhombic, acute at apex; leaf blade adaxially glabrous; sepals brown-purple 62. *A. chayuenense*
- 56b. Bracteoles linear (in *A. taronense* bracteoles of lowermost pedicels 3-fid).
- 58a. Leaf central lobe rhombic-ovate, 3-lobed, obtuse at apex, lobules obtuse at apex; upper sepal abaxially pubescent 72. *A. taronense*
- 58b. Leaf central lobe rhombic, subpinnately parted, acuminate at apex, lobules slightly acute at apex; upper sepal abaxially glabrous 88. *A. rockii*
- 1b. Leaf blade ternate to deeply 3-lobed.
- 59a. Leaf lobe serrate to shallowly divided, ultimate lobules ovate or narrowly ovate.
- 60a. Stem trailing, long branched, glabrous; inflorescence unequally dichotomous branching, glabrous; bracteoles leaflike, 3-lobed 131. *A. raddeanum*
- 60b. Stem erect or sometimes ascending, usually shortly branched; inflorescence rachis straight (in *A. dunhuaense* slightly dichotomously branched); bracteoles narrowly oblong or linear, entire.
- 61a. Caudices several, in a chain Key 6
- 61b. Caudices 2 or more, not in a chain.
- 62a. Leaf segments acuminate at apex (Taiwan).
- 63a. Stem and pedicels retrorse pubescent 133. *A. kojimae*
- 63b. Stem and pedicels spreading pubescent.
- 64a. Stem erect, less branched; upper sepal navicular; follicles erect 132. *A. fukutomiei*
- 64b. Stem twining, much branched; upper sepal hemispheric; follicles divergent 134. *A. formosanum*
- 62b. Leaf segments acute at apex (mainland China).
- 65a. Sepals yellowish or white.
- 66a. Sepals yellowish; petals, stamens, and 5 carpels glabrous 137. *A. wuchagouense*
- 66b. Sepals white; petals, stamens, and 3 carpels pubescent 174. *A. xiangchengense*
- 65b. Sepals purple-blue.
- 67a. Pedicels glabrous.
- 68a. Stem twining; upper sepal pyramidal; bracteoles broadly oblong to 3-lobed 90. *A. contortum*
- 68b. Stem erect; upper sepal galeate; bracteoles linear or subulate.
- 69a. Pedicels to 5 cm, straight upward; flowers \pm crowded 136. *A. kusnezoffii*
- 69b. Pedicels to 8 cm, oblique upward; flowers sparsely arranged 138. *A. birobidshanicum*
- 67b. Pedicels pubescent.
- 70a. Pedicels appressed pubescent.
- 71a. Leaf central lobe acute at apex.
- 72a. Leaf blade deeply 3-lobed, not ternate; upper sepal high galeate, 2–2.6 cm high 135. *A. carmichaelii*
- 72b. Leaf blade ternate; upper sepal hemispheric or galeate, 1–2.5 cm high.
- 73a. Upper sepal hemispheric, ca. 1 cm high; petaline claw geniculate at apex 101. *A. yanyuanense*
- 73b. Upper sepal galeate, 1–2.5 cm high; petaline claw not geniculate at apex .. 102. *A. japonicum*
- 71b. Leaf central lobe long acuminate at apex.

- 74a. Inflorescence rachis glabrous; pedicels appressed puberulous only at apex .. 136. *A. kusnezoffii*
74b. Inflorescence rachis and pedicels densely appressed pubescent.
75a. Leaf blade sparsely appressed pubescent on both surfaces; bracteoles 4–5 mm;
petals
sparsely pubescent; carpels 4 98. *A. chuosjiaense*
75b. Leaf blade abaxially glabrous; bracteoles 8–15 cm; petals glabrous; carpels 5 139. *A. bailangense*
- 70b. Pedicels spreading pubescent.
76a. Inflorescence rachis glabrous; pedicels spreading pubescent only near apex.
77a. Inflorescence dichotomously branched; pedicels 5–8.5 cm 142. *A. dunhuaense*
77b. Inflorescence not dichotomously branched; pedicels less than 5 cm.
78a. Leaf lobes coarsely dentate; petaline lip slightly emarginate 140. *A. jaluense*
78b. Leaf lobes pinnatisect; petaline lip 2-lobed at apex 141. *A. paniculigerum*
- 76b. Inflorescence rachis and pedicels spreading or retrorse pubescent.
79a. Bracteoles ovate or broadly ovate.
80a. Stem and leaf blade glabrous; petals glabrous; pedicels 2.5–3.5 cm 40. *A. hicksii*
80b. Stem and leaf blade pubescent; petals sparsely villous; pedicels 1–2.3 cm ... 41. *A. jilongense*
- 79b. Bracteoles linear.
81a. Upper sepal galeate; petals puberulous.
82a. Sepals abaxially glabrous; carpels pubescent 100. *A. pseudodivarticatum*
82b. Sepals abaxially pubescent; carpels glabrous.
83a. Inflorescence rachis, pedicels, and leaf blade yellowish pubescent 99. *A. zhaojiuense*
83b. Inflorescence rachis, pedicels, and leaf blade whitish pubescent 154. *A. legendrei*
- 81b. Upper sepal high galeate; petals glabrous.
84a. Leaf central segment broadly rhombic, acute at apex 135. *A. carmichaelii*
84b. Leaf central segment rhombic or narrowly rhombic, acuminate or long acuminate
at apex.
85a. Leaf central lobes coarsely dentate 140. *A. jaluense*
85b. Leaf central lobes pinnatisect 141. *A. paniculigerum*
- 59b. Leaf lobes deeply divided, ultimate lobules narrowly lanceolate to linear.
86a. Middle and distal leaves aggregated, very shortly petiolate or sessile.
87a. Caudices several forming a chain Key 6
87b. Caudices 2, rarely more and then not forming a chain.
88a. Inflorescence and sepals abaxially glabrous.
89a. Sepals purple-blue 201. *A. glabrisepalum*
89b. Sepals yellowish 206. *A. chilienshanicum*
- 88b. Inflorescence and sepals abaxially pubescent.
90a. Inflorescence spreading pubescent; upper sepal falcate-navicular.
91a. Sepals yellowish or blue-purple 205. *A. pendulum*
91b. Sepals blue-purple 207. *A. ludlowii*
- 90b. Inflorescence appressed pubescent; upper sepal navicular, low galeate, or hemispheric.
92a. Bracteoles contiguous with flower, leaflike or narrowly oblong 200. *A. sessiliflorum*
92b. Bracteoles remote from flower, linear or subulate, rarely leaflike or broadly linear.
93a. Carpels 3.
94a. Lower pedicels ascending, to 3 cm; upper sepal navicular or low galeate, 1.5–1.7 cm
from base to beak 202. *A. polyschistum*
94b. Lower pedicels erect, ca. 3 mm; upper sepal hemispheric, ca. 2 cm from base to
beak 199. *A. brachypodium*
- 93b. Carpels 5.
95a. Bracteoles usually 3-lobed, broadly linear, 5–9 × ca. 1.5 mm; carpels ± spreading
densely
yellowish villous 199. *A. brachypodium*
95b. Bracteoles undivided, subulate, 3–6 × ca. 0.5 mm; carpels sparsely appressed
puberulous.
96a. Leaf blade glabrous; sepals yellowish green or dark purple, abaxially pubescent;
petals
sparsely pubescent 203. *A. flavum*

- 96b. Leaf blade adaxially retrorse pubescent; sepals blue-purple, abaxially retrorse pubescent; petals glabrous 204. *A. yinschanicum*
- 86b. Middle and distal leaves sparsely arranged, middle cauline leaves petiolate, petioles subequaling leaf blades, upper petioles becoming short.
- 97a. Inflorescence rachis and pedicels pubescent (in *A. fusungense* and *A. laevicaule* rachis glabrous).
- 98a. Lateral sepals broadly triangular apically, acute or slightly acute at apex.
- 99a. Sepals greenish white, upper sepal ca. 1.4 cm from base to beak; petals ca. 6 mm, not spurred; carpels 3, glabrous 177. *A. brevipetalum*
- 99b. Sepals blue-purple, upper sepal 1.6–1.8 cm from base to beak; petals 15–19 cm, spur incurved; carpels 5, ovary pubescent.
- 100a. Stem 75–120 cm tall; leaf blade 8–12 cm wide; inflorescence many flowered; bracteoles linear 172. *A. acutiusculum*
- 100b. Stem ca. 30 cm tall; leaf blade to 4.5 cm wide; inflorescence ca. 10-flowered; bracteoles narrowly triangular 188. *A. falciforme*
- 98b. Lateral sepals orbicular-obovate, rounded or truncate at apex.
- 101a. Leaf lobules acute or acuminate at apex (in *A. smithii* slightly obtuse at apex); petaline spur incurved.
- 102a. Bracteoles broadly ovate or orbicular 42. *A. bracteolatum*
- 102b. Bracteoles linear or subulate (in *A. incisofidum* leaflike).
- 103a. Caudices 2 (if several, then not forming a chain) Key 5
- 103b. Caudices to 10 forming a chain Key 6
- 101b. Leaf lobules rounded, obtuse, or slightly acute at apex; petaline spur not incurved.
- 104a. Ovary glabrous 47. *A. jinyangense*
- 104b. Ovary densely appressed or spreading pubescent.
- 105a. Inflorescence 2- or 3-flowered; bracteoles lanceolate-linear or narrowly linear; petaline limb ca. 4 mm, lip ca. 1.8 mm 44. *A. wolongense*
- 105b. Inflorescence 8–12-flowered; bracteoles obovate or broadly elliptic or narrowly elliptic; petaline limb 6–8 mm, lip 4–5 mm.
- 106a. Inflorescence retrorse pubescent; bracteoles obovate or broadly elliptic; filaments puberulous 45. *A. pseudohuiliense*
- 106b. Inflorescence spreading pubescent; bracteoles narrowly elliptic; filaments glabrous 43. *A. huiliense*
- 97b. Inflorescence rachis and pedicels glabrous throughout.
- 107a. Upper sepal navicular or navicular-galeate.
- 108a. Bracteoles lobed or at least those of lower pedicels leaflike.
- 109a. Stem basally pubescent; upper sepal navicular-galeate; petaline limb pubescent, claw not geniculate at apex 167. *A. gammiei*
- 109b. Stem glabrous; upper sepal falcate-navicular; petals glabrous, claw geniculate at apex 181. *A. tangense*
- 108b. Bracteoles undivided, linear or subulate; upper sepal navicular.
- 110a. Bracteoles near base of pedicels; filaments sparsely puberulous at apex 189. *A. maowenense*
- 110b. Bracteoles at middle or distal part of pedicels; filaments glabrous.
- 111a. Stem ca. 70 cm tall; leaf lobules narrowly lanceolate or lanceolate-linear; inflorescence ca. 30-flowered; petaline claw geniculate at apex; carpels 3–5 182. *A. fangianum*
- 111b. Stem 20–50 cm tall; leaf lobules linear or narrowly linear; inflorescence 2–7-flowered; petaline claw not geniculate; carpels 3 195. *A. jeholense*
- 107b. Upper sepal galeate.
- 112a. Petaline limb ca. 1 mm wide 159. *A. ambiguum*
- 112b. Petaline limb more than 2 mm wide.
- 113a. Inflorescence 1- or 2- to several flowered, corymbose 149. *A. monanthum*
- 113b. Inflorescence racemose, more than 7-flowered.
- 114a. Sepals abaxially sparsely pubescent 144. *A. ningwuense*
- 114b. Sepal abaxially glabrous.
- 115a. Upper sepal 1.2–1.4 cm high; petaline claw geniculate at apex.
- 116a. Stem glabrous; terminal inflorescence ca. 35 cm, ca. 40-flowered; petals glabrous, spur ca. 1 mm, subglobose 164. *A. leiostachyum*
- 116b. Stem pubescent; terminal inflorescence ca. 7 cm, 7-flowered; petaline lip puberulous, spur ca. 5 mm, subcylindric 165. *A. pseudogeniculatum*

- 115b. Upper sepal 1.8–2 cm high; petaline claw not geniculate at apex.
117a. Leaf ultimate lobules triangular to lanceolate; carpels 5 136. *A. kusnezoffii*
117b. Leaf ultimate lobules lanceolate to linear; carpels 3 194. *A. soongoricum*

Key 5

- 1a. Pedicels and inflorescence rachis retrorse pubescent.
2a. Upper sepal high galeate; petaline limb inflated.
3a. Bracteoles usually leaflike 153. *A. ramulosum*
3b. Bracteoles not leaflike.
4a. Petals pubescent; carpels 3, glabrous 156. *A. chienningense*
4b. Petals glabrous; carpels 5 pubescent 147. *A. macrorhynchum*
2b. Upper sepal galeate, navicular, or falcate; petaline limb not inflated.
5a. Upper sepal navicular, navicular-galeate, or falcate.
6a. Carpels pubescent.
7a. Upper sepal falcate-navicular or falcate; petals pubescent, claw usually geniculate at apex 186. *A. tongolense*
7b. Upper sepal navicular; petals glabrous, claw not geniculate at apex 166. *A. richardsonianum*
6b. Carpels glabrous.
8a. Stem glabrous; upper sepal falcate-navicular or subfalcate 192. *A. leiwuqiense*
8b. Stem apically sparsely retrorse pubescent; upper sepal navicular or navicular-galeate.
9a. Stem to 70 cm tall, not branched; inflorescence 8–17 cm, several flowered; sepals abaxially glabrous or subglabrous 175. *A. sinonapelloides*
9b. Stem ca. 150 cm tall, apically branched; inflorescence elongate, up to 50 cm, 30-flowered; sepals abaxially pubescent 173. *A. refractum*
5b. Upper sepal galeate.
10a. Sepals yellow, frontal margin of upper sepal contracted; carpels 3 208. *A. coreanum*
10b. Sepals blue-purple, frontal margin of upper sepal not contracted; carpels 3 or 5.
11a. Sepals abaxially densely pubescent; petals pubescent.
12a. Inflorescence to 8 cm, 3–6-flowered; leaf central lobe broadly rhombic, acute at apex 180. *A. liangshanicum*
12b. Inflorescence to 60 cm, many flowered; leaf central lobe rhombic or rhombic-ovate, acuminate at apex 160. *A. kongboense*
11b. Sepals abaxially glabrous or subglabrous; petals glabrous.
13a. Stamens sparsely pubescent 162. *A. pseudokongboense*
13b. Stamens glabrous.
14a. Carpels 3, densely pubescent 176. *A. diqingense*
14b. Carpels 3 or 4, glabrous.
15a. Stem 36–40 cm tall; leaf blade 4.2–5.2 cm; lateral sepals adaxially yellow sericeous 187. *A. kagerpuense*
15b. Stem more than 100 cm tall; leaf blade 6–12 × 9–16 cm; lateral sepals adaxially glabrous or not yellow sericeous.
16a. Stem ca. 120 cm tall, not branched or 1-branched below inflorescence; leaf central lobe pinnatisect, ultimate lobules narrowly triangular to narrowly lanceolate; inflorescence ca. 10-flowered; upper sepal ca. 1.8 cm high 150. *A. incisofidum*
16b. Stem ca. 200 cm tall, multibranched; leaf central lobe bipinnatisect, ultimate lobules linear or narrowly linear; inflorescence ca. 50-flowered; upper sepal to 1.4 cm high 163. *A. polyanthum*
1b. Pedicels and inflorescence rachis spreading pubescent, or in *A. abietetorum* and pedicels spreading and appressed pubescent; in *A. tchangbaischanense* and in *A. daxinganlinense* retrorse and appressed pubescent; in *A. fusungense* rachis glabrous and in *A. dolichostachyum* pedicels glabrous.
17a. Upper sepal navicular or falcate.
18a. Upper sepal falcate.
19a. Pedicels 3–7 mm, erect 190. *A. chasmanthum*
19b. Pedicels 10–30 mm, ascending.
20a. Petaline limb glabrous; carpels 3 191. *A. prominens*
20b. Petaline limb pubescent; carpels 5 183. *A. liljesträndii*
18b. Upper sepal navicular.
21a. Sepals abaxially pubescent.

- 22a. Stem branched, branches 10–20 cm, flagelliform; petaline claw sparsely brown-yellow pubescent, geniculate at apex 170. *A. gezaense*
- 22b. Stem usually simple; petaline claw glabrous, not geniculate at apex.
- 23a. Inflorescence white, not glandular pubescent; upper sepal ca. 1.4 cm from base to beak; petaline spur ca. 1 mm, saccate 179. *A. smirnovii*
- 23b. Inflorescence yellowish and glandular pubescent; upper sepal 1.7–2 cm from base to beak; petaline spur more than 3 mm, incurved.
- 24a. Leaf central lobe pinnatisect to bipinnatisect; inflorescence to 50 cm, usually ca. 20-flowered; carpels 5, densely yellowish pubescent 166. *A. richardsonianum*
- 24b. Leaf central lobe shallowly divided; inflorescence to 18 cm, 3–7-flowered; carpels 3 or 4, glabrous or sparsely pubescent 193. *A. smithii*
- 21b. Sepals abaxially glabrous.
- 25a. Carpels sparsely spreading pubescent.
- 26a. Stem 85–100 cm tall; leaf blade 4.7–7 × 7–10 cm; inflorescence 25–35 cm, 15–20-flowered; pedicels 2–9 cm; bracteoles remote from flower 168. *A. ouvardianum*
- 26b. Stem 7–21 cm tall; leaf blade 1.7–2.2 × 1.7–4 cm; inflorescence 1–4 cm, 3–7-flowered; pedicels 0.5–1.1 cm; bracteoles contiguous with flower 171. *A. tenuicaule*
- 25b. Carpels glabrous.
- 27a. Inflorescence rachis and pedicels densely spreading yellowish pubescent, not yellow glandular pubescent; bracteoles pubescent; carpels 5.
- 28a. Stem apically densely retrorse and appressed pubescent; leaf sparsely appressed pubescent at veins; petaline claw geniculate at apex 184. *A. pycnanthum*
- 28b. Stem, spreading pubescent; leaf blade spreading pubescent at veins; petaline claw not geniculate at apex 169. *A. pilopetalum*
- 27b. Inflorescence rachis and pedicels spreading white pubescent and yellow glandular pubescent (in *A. bracteolosum* mixed with appressed hairs) or rachis sparsely hairy; bracteoles glabrous; carpels 3 or 4.
- 29a. Inflorescence rachis densely pubescent; bracteoles narrowly linear; upper sepal 1.5–1.7 cm from base to beak; petaline claw glabrous or sparsely pubescent, not geniculate at apex 183. *A. liljestrandii*
- 29b. Inflorescence rachis sparsely pubescent; bracteoles of lower pedicels leaflike; upper sepal ca. 2.2 cm from base to beak; petaline claw densely pubescent, geniculate at apex 185. *A. bracteolosum*
- 17b. Upper sepal high galeate or galeate.
- 30a. Upper sepal galeate.
- 31a. Sepals yellow, abaxially pubescent, anterior margin of upper sepal at middle contracted; petaline claw geniculate at apex 209. *A. anthoroideum*
- 31b. Sepals blue-purple, abaxially glabrous or pubescent, anterior margin of upper sepal not contracted; petaline claw not geniculate at apex or in *A. abietetorum* slightly geniculate.
- 32a. Sepals abaxially glabrous.
- 33a. Bracteoles linear; petals pubescent, claw not geniculate at apex, lip slightly emarginate; carpels 3 157. *A. potaninii*
- 33b. Bracteoles of lower pedicels leaflike, those of distal pedicels linear; petals glabrous, slightly geniculate at apex, lip 2-lobed at apex; carpels 5 161. *A. abietetorum*
- 32b. Sepals abaxially pubescent.
- 34a. Stem glabrous; leaf blade adaxially sparsely appressed pubescent, abaxially glabrous; inflorescence rachis glabrous; petaline spur circinate; filaments 2-denticulate 97. *A. laevicaule*
- 34b. Stem spreading pubescent apically; leaf blade glabrous; inflorescence rachis densely spreading yellowish pubescent; petaline spur incurved; filaments entire 193. *A. smithii*
- 30b. Upper sepal high galeate.
- 35a. Inflorescence rachis and pedicels glabrous 158. *A. dolichostachyum*

- 35b. Inflorescence rachis and pedicels spreading or retrorse pubescent, or in *A. fusungense* inflorescence rachis glabrous.
- 36a. Leaf blade adaxially appressed retrorse pubescent, with intermixed sparsely spreading hairs, abaxially spreading villous 146. *A. daxinganlinense*
- 36b. Leaf blade adaxially pubescent or pubescent only at veins, abaxially glabrous.
- 37a. Inflorescence rachis glabrous or retrorse pubescent.
- 38a. Leaf lobules narrowly lanceolate to linear-lanceolate; inflorescence rachis glabrous; pedicels 3–8 cm 143. *A. fusungense*
- 38b. Leaf lobules linear; inflorescence rachis retrorse pubescent or glabrous; pedicels 2–5 cm 148. *A. tchangbaischanense*
- 37b. Inflorescence rachis spreading pubescent.
- 39a. Ultimate leaf lobules ovate to lanceolate-linear, 4–6 mm wide; upper sepal usually with a long beak 141. *A. paniculigerum*
- 39b. Ultimate lobules linear or lanceolate; upper sepal with a short beak or not beaked
- 40a. Stem 40–70 cm tall, twining at least apically; leaf lobe deeply dissected, ultimate lobules linear, 1.8–3 mm wide; petaline limb inflated.
- 41a. Petaline spur circinate, 5–7 mm 155. *A. delavayi*
- 41b. Petaline spur saccate, less than 3 mm 145. *A. villosum*
- 40b. Stem more than 100 cm tall, erect; leaf lobe shallowly divided ultimate lobules lanceolate to broadly lanceolate; petaline limb not inflated.
- 42a. Sepals abaxially, petals, and carpels all glabrous; leaf ultimate lobules 2–5 mm wide; stem 110–180 cm tall 151. *A. piepunense*
- 42b. Sepals abaxially, petals, and carpels pubescent; leaf ultimate lobules 3–6 mm wide; stem ca. 100 cm tall 156. *A. chienningense*

Key 6

- 1a. Stem erect, usually robust; cauline leaves ternate, deeply dissected into fine ultimate lobules.
- 2a. Inflorescence rachis and pedicels glabrous 194. *A. soongoricum*
- 2b. Inflorescence rachis and pedicels appressed pubescent 196. *A. karakolicum*
- 1b. Stem ascending, slender; cauline leaves deeply 3-lobed, ultimate lobules lanceolate to broadly lanceolate.
- 3a. Inflorescence rachis and pedicels sparsely appressed pubescent 197. *A. talassicum*
- 3b. Inflorescence rachis and pedicels spreading pubescent 198. *A. nemorum*

1. *Aconitum* subgen. *Lycoctonum* (de Candolle) Petermann, Deutsch. Fl. 15. 1846.

牛扁亚属 niu bian ya shu

Aconitum sect. *Lycoctonum* de Candolle, Syst. Nat. 1: 367. 1817.

Herbs perennial, rhizomatous. Sepals not clawed; upper sepal cylindrical or high galeate, rarely navicular. Petaline limb with secretory tissue at apex, with a saccate or incurved spur; lip usually linear, or very short. Carpels 3(–8).

About 40 species: Asia, Europe, North America; 22 species (nine endemic) in China.

1. *Aconitum chrysotrichum* W. T Wang, Fl. Reipubl. Popularis Sin. 27: 604. 1979.

黄毛乌头 huang mao wu tou

Rhizome unknown. Stem 35–65 cm tall, simple, retrorse and spreading yellow hispid, basally with longer spreading hairs. Basal leaves long petiolate; petiole 3–7.5 cm, ± spreading yellow hispid; leaf blade suborbicular or orbicular-reniform, 1.2–3.2 × 2.4–5.4 cm, both surfaces hispid, base deeply cordate, 3-parted;

central lobe cuneate-obtrapezoid, 3-lobed, margin dentate; lateral lobes unequally 2-lobed. Cauline leaves 2–4, proximal ones similar to basal leaves, uppermost shortly petiolate. Inflorescence terminal, ca. 11 cm, ca. 12-flowered; rachis and pedicels densely spreading yellow hispid; proximally bracts leaflike, others linear. Pedicels 2–5 mm, each with 2 bracteoles at middle; bracteoles narrowly linear, 2–5 × ca. 0.4 mm. Sepals blue-purple, abaxially spreading yellow pubescent; lower sepals ca. 7 mm; lateral sepals ca. 7.5 mm; upper sepal cylindrical-galeate, 9–10 mm high, ca. 3.5 mm in

diam., external margin slightly contracted below middle, long beaked, lower margin 8–9 mm. Petals ca. 8 mm, glabrous, ecalcarate; limb ca. 5 mm; lip linear, ca. 3.5 mm. Stamens glabrous; filaments entire. Carpels 3; ovary yellowish villous. Fl. Aug.

• Scrub; 4300–4700 m. SW Sichuan (Daocheng Xian).

2. *Aconitum novoluridum* Munz, Gentes Herb. 6: 472. 1945. 展喙乌头 zhan hui wu tou
Aconitum luridum J. D. Hooker & Thomson (1855), not Salisbury (1796, nom. illeg., included *A. variegatum* Linnaeus).

Rhizome ca. 15 cm. Stem to 80 cm, simple, retrorse pubescent. Basal leaves ca. 2, and proximal cauline leaves long petiolate; petiole 19–23 cm; leaf blade reniform, ca. 6 × 10 cm, both surfaces sparsely appressed pubescent, 3-parted; central lobe cuneate-rhombic, 3-fid, each lobe 2- or 3-lobulate, with several ovate teeth; lateral lobes obliquely flabellate, unequally 2-lobed. Inflorescence terminal, ca. 30 cm, many flowered; rachis and pedicels densely spreading yellowish pubescent; proximal bracts 3-fid, others narrowly lanceolate to linear, 5–7 mm. Proximal pedicels 1–4 cm, others 1–7 mm, with 2 bracteoles at base; bracteoles ovate to linear, 0.6–4 mm. Sepals purplish, densely spreading pubescent; lower sepals 0.7–0.9 cm; lateral sepals 1–1.3 cm; upper sepal high galeate, 7–9 mm high, long beaked, lower margin 1.1–1.5 cm. Petaline lip linear, conspicuous. Stamens glabrous; filaments entire. Carpels 3(–5), base and abaxial suture sparsely pubescent. Follicles 1–1.2 cm. Seeds ellipsoid, to 3 mm. Fl. Jul–Aug, fr. Sep. $2n = 16$. Forest margins; 3800–4500 m. SE Xizang [Bhutan, Nepal, Sikkim].

3. *Aconitum apetalum* (Huth) B. Fedtschenko in Komarov, Fl. URSS 7: 200. 1937.

空茎乌头 kong jing wu tou

Delphinium apetalum Huth, Bot. Jahrb. Syst. 20: 398. 1895.

Rhizome unknown. Stem to 200 cm tall, ca. 1.5 cm in diam., shortly branched, glabrous or basally retrorse pubescent. Basal leaves and proximal cauline ones long petiolate; petiole 30–40 cm, pubescent; leaf blade orbicular-reniform, to 15 × 25 cm, 3-parted, abaxially pubescent at veins, adaxially glabrous; central lobe rhombic, 3-fid, margin lobulate and dentate; lateral lobes obliquely flabellate, unequally 2-lobed.

Inflorescence terminal, to 60 cm, many flowered; rachis and pedicels densely spreading pubescent; bracts linear, 4–5.5 mm. Pedicels 2–5 mm, with 2 bracteoles at base; bracteoles similar to bracts, but slightly shorter. Sepals white or yellowish, abaxially sparsely pubescent; lower sepals ca. 7.2 mm; lateral sepals ca. 7.8 mm; upper sepal high galeate, 6–8 mm high, 3.2–3.6 mm in diam., erect, subbase of external margin slightly contracted or not, long beaked, lower margin 8–10 mm. Petals shorter than sepals, ca. 6 mm, glabrous; limb ca. 1/2 as

long as claw; lip linear, conspicuous; spur absent. Stamens glabrous; filaments entire, rarely 1-denticulate. Carpels 3; ovary pubescent. Fr. Aug.

Picea forests, grassy slopes in valleys; 1700–1900 m. Xinjiang (Tian Shan) [Kazakhstan].

4. *Aconitum brevicealcaratum* (Finet & Gagnepain) Diels, Notes Roy. Bot. Gard. Edinburgh 5: 267. 1912.

弯短距乌头 wan duan ju wu tou

Rhizome oblique, terete, ca. 1.1 cm in diam. Stem 50–100 cm tall, basally densely retrorse and appressed pubescent. Basal leaves 3 or 4, and proximal cauline leaves long petiolate; petiole 14–20(–28) cm, retrorse pubescent; leaf blade reniform, 4.8–9.2 × 7.5–13 cm, both surfaces appressed pubescent, 3-parted; central lobe cuneate-obtrapezoid, 3-fid, margin dentate; lateral lobes flabellate, unequally 2-parted. Inflorescence 20–40 cm, densely flowered; rachis and pedicels densely spreading yellowish pubescent; basal bracts ± 3-sect, to 1.6 cm; lobes lanceolate or oblong to linear-oblong, 6–12 mm. Proximal pedicels to 1–2 cm, others 1.5–5 mm, with 2 bracteoles at base; bracteoles linear, 4–6 mm. Sepals blue or blue-purple, spreading pubescent; lower sepals ca. 9 mm; lateral sepals ca. 1 cm; upper sepal cylindric, 1.3–1.5 cm high, middle ca. 4.5 mm in diam., lower margin erect, 1–1.3 cm. Petals glabrous; limb short, apex rounded; lip linear, conspicuous; spur incurved, 4–5 mm, nearly ecalcarate, or spur short. Stamens glabrous; filaments entire. Carpels 3; ovary sericeous-pubescent. Follicles ca. 1.4 cm, pubescent. Seeds ca. 2 mm. Fl. Aug–Oct. $2n = 32^*$.

• Grassy slopes; 2800–3800 m. SW Sichuan, Yunnan.

- 1a. Petaline spur 4–5 mm, incurved 4a. var. *brevicalcaratum*
- 1b. Petal nearly ecalcarate or shortly spurred 4b. var. *parviflorum*

4a. *Aconitum brevicealcaratum* var. *brevicalcaratum*

弯短距乌头(原变种) wan duan ju wu tou (yuan bian zhong)

Aconitum lycoctonum Linnaeus var. *brevicalcaratum* Finet & Gagnepain, Bull. Soc. Bot. France 51: 502. 1904; *A. brevicealcaratum* var. *lauenerianum* (H. R. Fletcher) W. T. Wang; *A. lauenerianum* H. R. Fletcher; *A. lycoctonum* var. *vulparium* (Reichenbach) Regel. Petaline spur incurved, 4–5 mm.

• Grassy slopes; ca. 3500 m. SW Sichuan (Muli Zang Zu Zizhixian), NW Yunnan.

4b. *Aconitum brevicealcaratum* var. *parviflorum* Chen & Liu, Bull. Fan Mem. Inst. Biol., Bot. 11: 43. 1941.

短距乌头 duan ju wu tou

Aconitum brevicealcaratum f. *bracteatum* (Finet & Gagnepain) Handel-Mazzetti; *A. lycoctonum* var. *brevicalcaratum* f. *bracteatum* Finet & Gagnepain.

Petal nearly ecalcarate or shortly spurred.

•Grassy slopes; 2800–3800 m. SW Sichuan (Muli Zang Zu Zizhixian), Yunnan.

5. *Aconitum kialaense* W. T. Wang, Acta Bot. Yunnan. 15: 347. 1993.

卡拉乌头 ka la wu tou

Rhizome unknown. Stem ca. 80 cm tall, simple, sparsely retrorse strigose, ca. 5-leaved. Proximal and middle cauline leaves long petiolate or nearly so; petiole 3–8.5 cm; leaf blade pentagonal, 4.5–5.6 × 7.8–8.6 cm, both surfaces strigose, base deeply cordate, 3-parted; central lobe rhombic, apex acute, 3-lobed; ultimate lobes 1- or 2-dentate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence: axillary ones ca. 3, 9–13 cm; terminal one ca. 24 cm, ca. 27-flowered; rachis and pedicels spreading white villous, and yellowish glandular pubescent, or densely retrorse and appressed white pubescent; proximal bracts leaflike; others lanceolate-linear, 5–6 mm, pubescent. Pedicels usually 2–7 mm, proximal ones to 1.2 cm, with 2 bracteoles at base; bracteoles linear, 4–6 mm, spreading pubescent. Sepals abaxially spreading pubescent; lower sepals narrowly obovate or oblanceolate-linear, ca. 6.5 mm; lateral sepals oblong-obovate, ca. 6 mm; upper sepal slightly cylindrical, ca. 11 cm high, middle ca. 3 mm in diam., ca. 8 mm from base to beak. Petals glabrous; claw ca. 1 cm; lip linear, ca. 3.6 mm, slightly concave at apex; spur circinate, ca. 4 mm. Stamens glabrous. Carpels 3; ovary sparsely pilose. Fl. Aug.

•Sichuan (Kangding Xian).

6. *Aconitum scaposum* Franchet in Morot, J. Bot. 8: 277. 1894.

花葶乌头 hua ting wu tou

Rhizome terete, ca. 10 cm, ca. 8 mm in diam. Stem 35–67 cm tall, simple or branched, retrorse (rarely spreading) yellowish pubescent. Basal leaves 1–4, long petiolate; petiole 13–40 cm, base sheathed; leaf blade reniform-pentagonal; 5.5–1.1 × 8.5–22 cm, both surfaces appressed puberulous, base cordate, 3-fid; central lobe obtuse-trapezoid-rhombic, 3-lobed, margin dentate, apex acute, rarely acuminate; lateral lobes obliquely flabellate, unequally 2-lobed. Cauline leaves 2–4, smaller than basal ones, equally arranged along stem or mostly near stem base or below inflorescence, sometimes absent; petiole sheathed. Inflorescence (20–)25–40 cm, 15–40-flowered; rachis and pedicels densely spreading yellowish pubescent; bracts lanceolate or oblong. Pedicels 1.4–3.4 cm, spreading yellowish pubescent, with 2 bracteoles at base; bracteoles similar to but shorter than bracts. Sepals blue-purple, abaxially sparsely spreading hispid; upper sepal cylindrical, 1.3–1.8 cm high, external margin ± erect, with a beak. Petaline lip linear, conspicuous; spur circinate, 2–3 × as long as limb, sparsely pubescent or glabrous. Stamens glabrous; filaments entire. Carpels 3;

ovary sparsely villous. Follicles unequal in size, 7.5–13 mm. Seeds white, obovate, ca. 1.5 mm. Fr. Aug–Sep. $2n = 16^*$.

Forests, forest margins, grassy slopes, valleys; 1200–3900 m. S Gansu, Guizhou, SW Henan, Hubei, N Hunan, Jiangxi, S Shaanxi, Sichuan, N and NE Yunnan [Bhutan, N Myanmar, Nepal].

- 1a. Basal leaves 1 or 2, wilting at anthesis; cauline leaves 3 or 4, equally arranged along stem 6b. var. *hupehanum*
- 1b. Basal leaves 3 or 4, not wilting at anthesis, cauline leaves 2–5, not equally arranged along stem.
 - 2a. Cauline leaves 2–4, near stem base, petioles of cauline ones sheathed; sepals blue-purple 6a. var. *scaposum*
 - 2b. Cauline leaves 3–5, lowermost separate, 6–20 cm, distal ones crowded below inflorescence, petioles of cauline ones sheathed; sepals purple, rarely yellow 6c. var. *vaginatum*

6a. *Aconitum scaposum* var. *scaposum*

花葶乌头(原变种) hua ting wu tou (yuan bian zhong)

Aconitum lycoctonum Linnaeus var. *efoliatum* Rapaics; *A. lycoctonum* var. *ranunculoides* Finet & Gagnepain; *A. scaposum* var. *patentipilum* W. T. Wang; *A. scaposum* var. *pyramidale* Franchet.

Basal leaves 3 or 4, not wilting at anthesis. Cauline leaves 2–4, near stem base, petioles of cauline ones sheathed. Sepals blue-purple.

•Valleys, forests; 1200–2000 m. N Guizhou, SW Henan, Hubei, E Jiangxi, S Shaanxi, Sichuan.

6b. *Aconitum scaposum* var. *hupehanum* Rapaics, Növényt. Közlem. 6: 168. 1907.

等叶花葶乌头 deng ye hua ting wu tou

Aconitum chloranthum Handel-Mazzetti; *A. jucundum* Diels; *A. jucundum* var. *chloranthum* (Handel-Mazzetti) Handel-Mazzetti; *A. lycoctonum* var. *circinatum* H. Léveillé; *A. scaposum* var. *chloranthum* (Handel-Mazzetti) Lauener & Tamura.

Basal leaves 1 or 2, wilting at anthesis; cauline leaves 3 or 4, equally arranged along stem and all normally developed.

Forests, forest margins, grassy slopes; 1300–3900 m. S Gansu, Hubei, N Hunan, NW Jiangxi, S Shaanxi, Sichuan, N Yunnan [Bhutan, N Myanmar, Nepal].

6c. *Aconitum scaposum* var. *vaginatum* (E. Pritzel ex Diels) Rapaics, Növényt. Közlem. 6: 168. 1907.

聚叶花葶乌头 ju ye hua ting wu tou

Aconitum vaginatum E. Pritzel in Diels, Bot. Jahrb. Syst. 29: 328. 1900; *A. scaposum* var. *pseudovaginatum*

Rapaics; *A. vaginatum* var. *xanthanthum* Handel-Mazzetti.

Basal leaves 3 or 4, not wilting at anthesis. Cauline leaves 3–5, lowermost separate, 6–20 cm, distal ones crowded below inflorescence, petioles of cauline ones sheathed. Sepals purple, rarely yellow. $2n = 16^*$.

• Forests, forest margins; 1800–2000 m. Gansu, Guizhou, W Hubei, N Hunan, S Shaanxi, Sichuan, NE Yunnan.

7. *Aconitum cavaleriei* H. Léveillé & Vaniot, Bull. Soc. Agric. Sarthe 60: 78. 1905.

黔川乌头 qian chuan wu tou

Rhizome terete, to 12 cm in diam. Stem ca. 40 cm tall, shortly 1-branched below inflorescence, glabrous. Basal leaves ca. 3, long petiolate; petiole 12–24 cm, glabrous, base sheathed; leaf blade pentagonal, 4.8–1.2 × 6–15 cm, both surfaces glabrous, base subtruncate or truncate-cordate, apex acute or long acuminate, 3-parted; central lobe narrowly rhombic, 3-lobed; lateral lobes obliquely rhombic, unequally 2-fid beyond middle. Cauline leaves 1–4, similar to basal ones, or cauline leaves 6–11 and crowded below inflorescence. Inflorescence ca. 20 cm, sparsely ca. 20-flowered, basal bracts subspatulate, distal part 2-denticulate, others linear-lanceolate to lanceolate-triangular; rachis and pedicels appressed or ± spreading yellow puberulous. Pedicel 1–4.2 cm, with 2 bracteoles at base; bracteoles narrowly ovate, 8–11 mm. Sepals purple, abaxially sparsely puberulous; lower sepals ca. 0.7 cm; lateral sepals ca. 0.9 cm; upper sepal cylindrical, 1.6–2 cm high, middle 3–5 mm in diam., external margin erect, lower margin 1.1–1.5 cm. Petals ca. 9 mm; claw upper part and limb sparsely pubescent; lip linear, conspicuous; spur rarely incurved, slightly longer than limb, glabrous. Stamens glabrous; filaments entire. Carpels 3; ovary sparsely appressed pubescent. Fl. May.

• Wet places on mountains, by streams, forests; 1400–2200 m. Guizhou, Hunan, N and W Sichuan.

- 1a. Cauline leaves 1–4, lobes acute at apex 7a. var. *cavaleriei*
- 1b. Cauline leaves 6–11, crowded below inflorescence, lobes usually long acuminate at apex 7b. var. *aggregatifolium*

7a. *Aconitum cavaleriei* var. *cavaleriei*

黔川乌头(原变种) qian chuan wu tou (yuan bian zhong)

Cauline leaves 1–4; lobes acute at apex.

• Wet places on mountains. Guizhou, Hunan, W Sichuan.

7b. *Aconitum cavaleriei* var. *aggregatifolium* (Chang ex W. T. Wang) W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 165. 1979.

聚叶黔川乌头 ju ye qian chuan wu tou

Aconitum aggregatifolium Chang ex W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 60. 1965.

Cauline leaves 6–11, crowded below inflorescence; lobes usually long acuminate at apex.

• By streams, forests; 1400–2200 m. N Sichuan.

8. *Aconitum crassiflorum* Handel-Mazzetti, Symb. Sin. 7: 283. 1931.

粗花乌头 cu hua wu tou

Rhizome terete, to 7 cm. ca. 1 cm in diam. Stem 48–70 (–110) cm tall, 1-branched below inflorescence, basally sparsely retrorse yellowish scabrous pubescent. Basal leaves 2 or 3, long petiolate; petiole 15–30 cm; leaf blade orbicular-reniform or reniform, 3.6–7 × 7.6–12 cm, both surfaces sparsely shortly strigose, 3-parted beyond middle; central lobe cuneate-obtrapezoid, 2-fid; lateral lobes obliquely flabellate, unequally 2- or 3-fid. Cauline leaves 2 or 3 (–5), similar to basal ones.

Inflorescence 14–20 (–36) cm, ca. 10-flowered; rachis and pedicels densely spreading pubescent; basal bracts 3-fid, others linear, smaller, 3.5–5 mm, unlobed.

Proximal pedicels 1.2–3.5 (–5.5) cm, others 5–12 mm, with 2 bracteoles at base of pedicels, rarely at middle, bracteoles linear, 2.5–3.5 mm. Sepals blue-purple,

sparsely pubescent; lower sepals 0.8–1.1 cm; lateral sepals 9–1.2 cm; upper sepal cylindrical, 1.6–2 (–2.3) cm high, middle 4–7 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly circinate, usually slightly longer than lip. Stamens glabrous; filaments entire. Carpels 3; ovary sparsely pubescent. Fl. Jul–Aug. $2n = 32^*$.

• Forests, scrub, grassy slopes; 3200–4200 m. SW Sichuan, NW Yunnan.

9. *Aconitum rilongense* Kadota, J. Jap. Bot. 74: 283. 1999.

邛崃山乌头 qiong lai shan wu tou

Rhizome terete, to 10 cm, ca. 1 cm in diam. Stem 50–100 cm tall, sparsely pubescent with flexuous hairs.

Basal leaves withered at anthesis. Proximal cauline leaves long petiolate, petiole 15–30 cm; leaf blade reniform, 14–20 × 14–23 cm, both surfaces sparsely shortly strigose, (5–)7–9-lobed to 2–4 cm from base; central lobe obovate-rhombic; lateral lobes obliquely flabellate, unequally 2- or 3-fid. Inflorescence 14–16 (–30) cm, 14–45-flowered; rachis and pedicels densely retrorse pubescent; basal bracts 3-lobed, others linear, smaller, 3.5–5 mm, unlobed. Proximal pedicels 1–1.5 cm, with 2 bracteoles at base of pedicels, bracteoles linear, 5–8 mm. Sepals dull yellow, sparsely retrorse pubescent; lower sepals 0.6–0.9 cm; lateral sepals 0.8–0.9 cm; upper sepal cylindrical, 1.3–2.2 cm high, 8–10 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly incurved, usually slightly longer than lip.

Proximal pedicels 1–1.5 cm, with 2 bracteoles at base of pedicels, bracteoles linear, 5–8 mm. Sepals dull yellow, sparsely retrorse pubescent; lower sepals 0.6–0.9 cm; lateral sepals 0.8–0.9 cm; upper sepal cylindrical, 1.3–2.2 cm high, 8–10 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly incurved, usually slightly longer than lip.

Proximal pedicels 1–1.5 cm, with 2 bracteoles at base of pedicels, bracteoles linear, 5–8 mm. Sepals dull yellow, sparsely retrorse pubescent; lower sepals 0.6–0.9 cm; lateral sepals 0.8–0.9 cm; upper sepal cylindrical, 1.3–2.2 cm high, 8–10 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly incurved, usually slightly longer than lip.

Proximal pedicels 1–1.5 cm, with 2 bracteoles at base of pedicels, bracteoles linear, 5–8 mm. Sepals dull yellow, sparsely retrorse pubescent; lower sepals 0.6–0.9 cm; lateral sepals 0.8–0.9 cm; upper sepal cylindrical, 1.3–2.2 cm high, 8–10 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly incurved, usually slightly longer than lip.

Proximal pedicels 1–1.5 cm, with 2 bracteoles at base of pedicels, bracteoles linear, 5–8 mm. Sepals dull yellow, sparsely retrorse pubescent; lower sepals 0.6–0.9 cm; lateral sepals 0.8–0.9 cm; upper sepal cylindrical, 1.3–2.2 cm high, 8–10 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly incurved, usually slightly longer than lip.

Proximal pedicels 1–1.5 cm, with 2 bracteoles at base of pedicels, bracteoles linear, 5–8 mm. Sepals dull yellow, sparsely retrorse pubescent; lower sepals 0.6–0.9 cm; lateral sepals 0.8–0.9 cm; upper sepal cylindrical, 1.3–2.2 cm high, 8–10 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly incurved, usually slightly longer than lip.

Proximal pedicels 1–1.5 cm, with 2 bracteoles at base of pedicels, bracteoles linear, 5–8 mm. Sepals dull yellow, sparsely retrorse pubescent; lower sepals 0.6–0.9 cm; lateral sepals 0.8–0.9 cm; upper sepal cylindrical, 1.3–2.2 cm high, 8–10 mm in diam., apex rounded, with a beak, lower margin 0.9–1.2 cm. Petals glabrous; lip linear, conspicuous; spur slightly incurved, usually slightly longer than lip.

Stamens glabrous; filaments entire. Carpels 3, glabrous or spreading pubescent. Fl. Aug–Sep.

• Forests, scrub; 3000–3300 m. C Sichuan (Xiaojin Xian).

10. *Aconitum longecassidatum* Nakai, J. Coll. Sci. Imp. Univ. Tokyo 26: 27. 1909.

高帽乌头 gao mao wu tou

Rhizome unknown. Stem ca. 65 cm tall, apically shortly branched, retrorse yellowish pubescent. Basal leaves unknown; cauline leaves ca. 6, proximal ones long petiolate, distal ones shortly petiolate; petiole 5–20 cm; leaf blade pentagonal-reniform, ca. 7 × 12 cm, both surfaces yellowish pubescent, 3-fid beyond middle; central lobe obtrapezoid-rhombic, below middle 3-lobed; lateral lobes obliquely flabellate, unequally 2-fid ± to middle. Inflorescence ca. 10 cm, 6- or 7-flowered, rachis and pedicels densely retrorse and appressed yellow pubescent, bracts ovate or narrowly ovate, 0.9–1.4 cm. Pedicels 7–10 mm, with 2 bracteoles at middle; bracteoles spatulate-linear, 6–7.5 mm. Sepals purple, abaxially densely yellowish pubescent; lower sepals ca. 1.1 cm; lateral sepals ca. 1 cm; upper sepal cylindric, ca. 2.2 cm high, middle ca. 4.5 mm in diam., apex rounded, shortly beaked, lower margin ca. 1.2 cm. Petals glabrous; lip linear, conspicuous; spur curved, ca. 2.5 × as long as lip. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3; ovary glabrous. Fl. Sep.

Mountains. S Liaoning, E Shandong (Qingdao) [Korea].

11. *Aconitum finetianum* Handel-Mazzetti, Acta Horti Gothob. 13: 80. 1939.

赣皖乌头 gan wan wu tou

Aconitum sioseanum Migo.

Rhizome terete, ca. 8 cm, 3–4 mm in diam. Stem twining, ca. 1 m tall, sparsely retrorse pubescent. Proximal cauline leaves long petiolate; petiole to 30 cm, nearly glabrous; leaf blade pentagonal-reniform, 6–10 × 10–18 cm, both surfaces sparsely appressed pubescent; distal leaves smaller above, petioles slightly shorter than or subequaling leaf blade. Inflorescence 8–14 cm, 4–9-flowered; rachis and pedicels densely yellowish retrorse pubescent; bracts leaflike to ovate to linear, 2–5 mm. Pedicels 3.5–8 mm, with 2 bracteoles at middle or near base; bracteoles linear. Sepals white or purplish, abaxially appressed pubescent; lower sepals narrowly elliptic; lateral sepals obovate; upper sepal cylindric, 1.3–1.5 cm high, middle 2.5–3(–5) mm in diam., erect or slightly curved, external margin with a beak, lower margin ca. 1 cm. Petals 1.3–1.5 cm, glabrous; lip linear, conspicuous; spur slightly circinate at apex, subequaling or slightly longer than lip. Stamens glabrous; filaments entire. Carpels 3; ovary sparsely appressed yellowish pubescent. Follicles 0.8–1.1 cm. Seeds ca. 1.5 mm. Fl. Aug–Sep, fr. Oct.

• Wet places on mountains; 800–1600 m. S Anhui, Fujian, Hunan (Anhua Xian), Jiangxi, Zhejiang.

12. *Aconitum alboviolaceum* Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 18: 439. 1901.

两色乌头 liang se wu tou

Rhizome terete, 10–15 cm. Stem twining or erect, 0.3–2.5 m tall, sparsely retrorse pubescent or becoming glabrous. Basal leaf 1, and proximal cauline leaves long petiolate, distal ones shortly petiolate, smaller above; petiole 3–35 cm; leaf blade pentagonal-reniform, 6.5–9.5(–18) × 9.5–17(–25) cm, both surfaces sparsely appressed pubescent; base cordate, 3-parted beyond ± middle; central lobe rhombic-obtrapezoid, broadly rhombic or rhombic, 3-lobed, margin dentate above middle; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence 6–14 cm, 3–8-flowered; rachis and pedicels densely spreading pubescent; bracts linear, 3–3.5 mm. Pedicels 5–9 mm, with 2 bracteoles at base or middle; bracteoles similar to bracts. Sepals purplish or ± white, abaxially spreading pubescent; lower sepals 0.8–1.2 cm; lateral sepals 1–1.5 cm; upper sepal cylindric, 1.3–2 cm high, middle 2.8–5 mm in diam., shortly beaked, lower margin 1.3–2 cm. Petals glabrous; lip linear, conspicuous; spur circinate, longer than lip. Stamens glabrous; filaments entire. Carpels 3; ovary sparsely spreading pubescent or glabrous. Follicles erect, ca. 1.2 cm. Seeds ca. 2.5 mm. Fl. Aug–Sep. *2n* = 16*.

Forests, scrub in valleys, mountains; 300–1400 m. N Hebei, S Heilongjiang, Jilin, Liaoning [Korea, Russia (Far East)].

- 1a. Stem twining, 100–250 cm tall; carpels sparsely spreading pubescent or glabrous 12a. var. *alboviolaceum*
- 1b. Stem erect, ca. 30 cm tall; carpels glabrous 12b. var. *erectum*

12a. *Aconitum alboviolaceum* var. *alboviolaceum*

两色乌头(原变种) liang se wu tou (yuan bian zhong)
Aconitum alboviolaceum f. *albiflorum* S. H. Li & Y. H. Huang; *A. alboviolaceum* var. *albiflorum* (S. H. Li & Y. H. Huang) S. H. Li; *A. alboviolaceum* var. *purpurascens* Nakai.

Stem twining, 1–2.5 m tall. Carpels sparsely spreading pubescent or glabrous.

Forests, scrub in valleys; 300–1400 m. N Hebei, S Heilongjiang, Jilin, Liaoning [Korea, Russia (Far East)].

12b. *Aconitum alboviolaceum* var. *erectum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 62. 1965.

直立两色乌头 zhi li liang se wu tou

Stem erect, ca. 30 cm tall. Carpels glabrous.

• Mountains, ca. 1000 m. Beijing (Miyun Xian).

13. *Aconitum wardii* H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 188. 1950.

滇川乌头 dian chuan wu tou

Rhizome unknown. Stem 60–75 cm tall, usually simple, pilose. Basal leaves and proximal cauline leaves long petiolate; petiole to 24 cm; leaf blade reniform-pentagonal, 7–15 × 10–20 cm, palmately 5–7-parted or

3-sect; segment rhombic, 3-fid, sharply dentate, abaxially sparsely pubescent at veins, adaxially appressed pubescent. Inflorescence to 25 cm, many flowered; rachis and pedicels spreading pubescent; proximal bracts leaflike, others linear. Pedicels 1–4 cm, with 2 bracteoles below middle of pedicels. Sepals violet, sometimes yellow-white, abaxially sparsely pubescent; lower sepals 8–10 cm; lateral sepals obliquely broadly obovate, 1–1.2 cm; upper sepal cylindrical, 2–2.5 cm high, ca. 3.5 mm in diam. at middle, with a beak, lower margin ca. 1.2 cm. Petals glabrous; lip linear, ca. 5 mm; spur circinate, longer than lip. Stamens glabrous; filaments entire. Carpels 3, glabrous or ovary pilose.

• Mountains, *Abies* forests; 3700–4500 m. W Sichuan, NW Yunnan (Dêqên Xian, Zhongdian Xian).

1a. Leaf blade palmately 5–7-parted .. 13a. var. *wardii*
1b. Leaf blade 3-sect 13b. var. *trisectum*

13a. *Aconitum wardii* var. *wardii*

滇川乌头(原变种) dian chuan wu tou (yuan bian zhong)

Aconitum wardii f. *flavidum* H. R. Fletcher & Lauener.

Leaf blade palmately 5–7-parted.

• Mountains; ca. 4500 m. W Sichuan, NW Yunnan (Dêqên Xian, Zhongdian Xian).

13b. *Aconitum wardii* var. *trisectum* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 24. 1987.

全裂滇川乌头 quan lie dian chuan wu tou

Leaf blade 3-sect.

• *Abies* forests; 3700–4000 m. W Sichuan (Yajiang Xian).

14. *Aconitum sinomontanum* Nakai, Rep. Exped. Manchoukuo, Sect. 4, 2: 146. 1935.

高乌头 gao wu tou

Rhizome terete, ca. 20 cm, to 2 cm in diam. Stem (60–) 95–150 cm tall, simple or branched, below inflorescence retrorse pubescent, basally nearly glabrous. Basal leaf 1, and proximal cauline leaves long petiolate; petiole 30–50 cm, nearly glabrous; leaf blade reniform or orbicular-reniform, 12–14.5 × 20–28 cm, both surfaces sparsely pubescent or glabrescent, base cordate, 3-parted; central lobe narrowly cuneate-rhombic, 3-fid with irregular triangular teeth at margin, apex acuminate; lateral lobes obliquely flabellate, unequally 3-fid slightly beyond middle. Inflorescence (20–)30–50 cm, many flowered; rachis and pedicels ± appressed pubescent; proximal bracts leaflike, others linear, 0.7–1.8 cm. Pedicels 0.7–5(–5.5) cm, with 2 bracteoles usually at middle; bracteoles narrowly linear, 3–9 mm. Sepals blue-purple or pale blue, abaxially densely retrorse pubescent; lower sepals 1.1–1.2 cm; lateral sepals 1–1.2 cm; upper sepal cylindrical, 1.6–2(–3)

cm high, 4–7(–9) mm in diam., lower margin 1.1–1.5 cm. Petals to 2 cm, glabrous; limb liguliform, ca. 3.5 mm; lip linear, conspicuous; spur circinate, ca. 6.5 mm. Stamens glabrous; filaments usually 1- or 2-denticulate, rarely entire. Carpels 3; ovary glabrous. Follicles 1.1–1.7 cm. Seeds obovate, ca. 3 mm. Fl. Jun–Sep. $2n = 16^*$, 32^* .

• Grassy slopes, forests, wet places in valleys; 1000–3700 m. S Gansu, NE Guangxi, Guizhou, Hebei, W Hubei, C and E Hunan, N and W Jiangxi, E Qinghai, Shaanxi, Shanxi, Sichuan, ?Yunnan.

Yang (Acta Phytotax. Sin. 37: 86. 1999) treated *Aconitum jin-chengense* L. C. Wang & J. Silba (Phytologia 71: 307. 1991) as a synonym of *A. sinomontanum*. One of us (Kadota) agrees with that treatment.

- 1a. Ovary appressed pubescent; filaments usually entire 14b. var. *pilocarpum*
1b. Ovary glabrous; filaments usually 1- or 2-denticulate.
2a. Leaves 3-parted to 6/7 blade length; central lobe narrowly cuneate-rhombic; pedicels 0.7–5 cm; upper sepal 4–7(–9) mm in diam. at middle 14a. var. *sinomontanum*
2b. Leaves 3-parted to 3/4 blade length; central lobe wider, usually rhombic; pedicels 0.4–1 cm; upper sepal 2.5–4 mm in diam. at middle 14c. var. *angustius*

14a. *Aconitum sinomontanum* var. *sinomontanum*

高乌头(原变种) gao wu tou (yuan bian zhong)

Aconitum moldavicum Hacquet var. *sinomontanum* (Nakai) Tamura & Lauener; *Lycocotonum shansiense* Nakai; *L. sinomontanum* (Nakai) Nakai.

Leaves 3-parted to 6/7 blade length; central lobe narrowly cuneate-rhombic. Pedicel 0.7–5 cm. Upper sepal 4–7(–9) mm in diam. at middle. Filaments usually 1- or 2-denticulate. Ovary glabrous. $2n = 16^*$, 32^* .

• Grassy slopes, forests; 1000–3700 m. S Gansu, Guizhou, Hebei, W Hubei, E Qinghai, Shaanxi, Shanxi, Sichuan.

14b. *Aconitum sinomontanum* var. *pilocarpum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 62. 1965.

毛果高乌头 mao guo gao wu tou

Aconitum moldavicum Hacquet f. *pilocarpum* (W. T. Wang) Tamura & Lauener.

Filaments usually entire. Ovary appressed pubescent.

• Forests; 3100–3600 m. NW Sichuan (Barkam Xian).

14c. *Aconitum sinomontanum* var. *angustius* W. T. Wang in B. J. Chen, Observ. Fl. Hwangshan. 114. 1965.

狭盔高乌头 xia kui gao wu tou

Aconitum angustius (W. T. Wang) W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 62. 1965.

Leaves 3-parted to 3/4 blade length; central lobe wider, usually rhombic. Pedicel 0.4–1 cm. Upper sepal 2.5–4

mm in diam. at middle. Filaments usually 1- or 2-denticulate. Ovary glabrous. $2n = 32^*$.

• Wet places in valleys; 1400–1600 m. S Anhui, NE Guangxi, C and E Hunan, N and W Jiangxi.

15. *Aconitum leucostomum* Voroschilov, Bull. Princ. Bot. Gard. Acad. Sci. URSS 11: 62. 1952.

白喉乌头 bai hou wu tou

Rhizome unknown. Stem ca. 1 m tall, basally sparsely retrorse pubescent or nearly glabrous, apically spreading glandular pubescent. Basal leaf ca. 1, and proximal cauline leaves long petiolate; petiole 20–30 cm; leaf blade reniform or orbicular-reniform, ca. 14×18 cm, abaxially sparsely retrorse pubescent (hairs 0.5–0.8 mm), adaxially glabrous or nearly so, 3-parted; central lobe broadly rhombic, 3-fid; lateral lobes obliquely flabellate, unequally 3-fid. Inflorescence 20–45 cm, many flowered; rachis and pedicels densely spreading yellowish shortly glandular pubescent; basal bracts 3-fid, others linear, subequaling or longer than pedicels, to 3 cm. Pedicels 1–3 cm, with 2 bracteoles at middle or below; bracteoles narrowly linear or filiform, 3–8 mm. Sepals pale blue-purple, lower part white, abaxially pubescent; lower sepals ca. 1.1 cm; lateral sepals ca. 1.2 cm; upper sepal cylindrical, 1.5–2.4 cm high, middle 4–5 mm in diam., beaked, lower margin 0.9–1.5 cm. Petals glabrous; lip linear, conspicuous; spur slightly circinate, longer than lip. Stamens glabrous; filaments entire. Carpels 3; ovary glabrous. Follicles 1–1.2 cm. Seeds obovate. Fl. Jul–Aug. $2n = 16$. Grassy mountain slopes, valleys, forests, forest margins; 900–2600 m. NW Gansu (Shandan Xian), N Hebei, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia (W Siberia)].

- 1a. Pedicels \pm erect upward below middle;
sepals pale blue-purple, upper sepal exterior margin contracted .. 15a. var. *leucostomum*
1b. Pedicels obtusely oblique upward;
sepals purple, upper sepal exterior margin indistinctly contracted . 15b. var. *hopeiense*

15a. *Aconitum leucostomum* var. *leucostomum*

白喉乌头(原变种) bai hou wu tou (yuan bian zhong)

Pedicels \pm erect upward below middle. Sepals pale blue-purple; upper sepal exterior margin contracted. Grassy mountain slopes, valleys; 1400–2600 m. NW Gansu (Shandan Xian), Xinjiang [Kazakhstan].

15b. *Aconitum leucostomum* var. *hopeiense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 62. 1965.

河北白喉乌头 he bei bai hou wu tou

Aconitum hopeiense (W. T. Wang) Voroschilov; *A. wardii* H. R. Fletcher & Lauener var. *hopeiense* (W. T. Wang) Tamura & Lauener.

Pedicels and rachis obtusely oblique upward. Sepals purple; upper sepal exterior margin indistinctly contracted.

• Forest margins, forests, 900–1600 m. Beijing, N Hebei (Xinglong Xian).

Alexander N. Luferov (pers. comm.) believes that this taxon should be treated at the rank of species.

16. *Aconitum septentrionale* Koelle, Spic. Observ. Aconit. 22. 1787.

紫花高乌头 zi hua gao wu tou

Aconitum excelsum Reichenbach, Monogr. Acon. t. 53. 1820.

Rhizome unknown. Stem ca. 85 cm tall, basally becoming glabrous, middle sparsely downward pubescent, apically with few glandular hairs. Basal leaf 1, withered at anthesis, and proximal cauline leaves long petiolate; petiole to 32 cm, leaf blade reniform or orbicular-reniform, to 10×20 cm, abaxially with erect yellowish hairs 0.8–1.2 mm at veins, adaxially sparsely appressed pubescent. Inflorescence ca. 12 cm; rachis and pedicels densely spreading and retrorse yellowish glandular pubescent. Pedicels 1.7–3 cm, below middle pedicel and rachis obtusely oblique upward; bracts leaflike, distal ones linear, distally with 2 bracteoles; bracteoles subulate, 3–7 mm. Sepals purple, adaxially sparsely yellowish glandular pubescent; lower sepals ca. 1 cm; lateral sepals ca. 1.1 cm; upper sepal cylindrical, ca. 2.4 cm high, middle ca. 4 mm in diam., lower margin ca. 1.3 cm. Petals glabrous; lip linear, conspicuous; spur circinate, ca. 1 cm, ca. 3 \times as long as lip. Stamens glabrous; filaments entire. Carpels 3; ovary glabrous or pubescent. Follicles 1–1.4 cm. Fl. Jul. $2n = 16$.

Betula forests, ca. 1700 m. Heilongjiang, NW Liaoning [Mongolia, Russia (Siberia); Europe].

17. *Aconitum monticola* Steinberg in Komarov, Fl. URSS 7: 730. 1937.

山地乌头 shan di wu tou

Rhizome unknown. Stem ca. 1.2 m tall, ca. 8 mm in diam., basally nearly glabrous, apically sparsely spreading yellowish pubescent. Basal leaves withered at anthesis, and proximal cauline leaves long petiolate; petiole 17–20 cm, sparsely retrorse pubescent; leaf blade orbicular-reniform, ca. 14×22 cm, abaxially sparsely pubescent at veins, adaxially glabrous, 3-parted; central lobe rhombic, 3-fid at middle, apex acute, several lobulate and irregularly triangular-dentate at margin; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence ca. 25 cm, many flowered; rachis and pedicels densely spreading yellowish pubescent; basal bracts 3-fid, others linear-lanceolate to linear. Pedicels 0.8–2 cm, with 2 bracteoles at middle or basal part; bracteoles linear, 4–6 mm. Sepals yellow, abaxially sparsely pubescent; lower sepals ca. 1.1 cm; lateral sepals ca. 1 cm; upper sepal cylindrical, ca. 1.5 cm high, ca. 4 mm in diam., shortly beaked, lower margin 1–1.3 cm. Petals subequaling upper sepals, glabrous; lip linear, conspicuous; spur slightly curved, subequaling lip. Stamens glabrous; filaments entire. Carpels 3; ovary glabrous. Fl. Aug.

Wet places in valleys; ca. 2300 m. Xinjiang [Kazakhstan].

Further study is necessary to determine the identity of *Aconitum wangyedianense* Y. Z. Zhao (Bull. Bot. Res., Harbin 3(1): 159. 1983), which may be synonymous with this taxon.

18. *Aconitum umbrosum* (Korshinsky) Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 22: 250. 1903.

草地乌头 cao di wu tou

Aconitum lycoctonum f. *umbrosum* Korshinsky, Trudy Imp. S.-Peterburgsk. Bot. Sada 12: 299. 1892; *A. paishanense* Kitagawa.

Rhizome terete, more than 10 cm, ca. 1 cm in diam. Stem 70–100 cm tall, below inflorescence few branched, sparsely retrorse pubescent. Basal leaves ca. 3, and proximal cauline leaves long petiolate; petiole 28–50 cm, nearly glabrous; leaf blade reniform-pentagonal, 7–12 × 10–20 cm, base cordate, 3-parted; central lobe cuneate-rhombic or rhombic; lateral lobes obliquely flabellate, unequally 2- or 3-fid, both surfaces sparsely appressed pubescent, abaxially usually glabrous. Inflorescence 10–30 cm, 7–20-flowered; rachis and pedicels densely retrorse pubescent; basal bracts 3-fid, others linear, 4–7.5 mm. Pedicels 0.8–2.5 cm, with 2 bracteoles above base; bracteoles linear-subulate, 1.5–2.5 mm. Sepals yellow or yellowish, abaxially pubescent; lower sepals ca. 0.9 cm; lateral sepals ca. 0.8 cm; upper sepal subcylindric, 1.5–1.9 cm high, 3.5–6 mm in diam., shortly beaked, lower margin suberect, 0.8–1 cm. Petals glabrous; lip linear, ca. 3 mm; spur circinate, longer than lip. Stamens glabrous; filaments entire. Carpels 3; ovary glabrous. Fl. Jul.

Wet places of forests. N Hebei, Heilongjiang, Jilin [N Korea, Russia (Far East)].

19. *Aconitum ranunculoides* Turczaninow ex Ledebour, Fl. Ross. 1: 67. 1841.

毛茛叶乌头 mao gen ye wu tou

Rhizome unknown. Stem to 70 cm tall, erect, simple, glabrous or apically retrorse pubescent. Basal leaves several, long petiolate; petiole to 15 cm, cauline leaves with petiole ca. 3.5 cm; leaf blade suborbicular, ca. 5 × 8 cm, abaxially glabrous or sparsely pubescent at veins, adaxially sparsely appressed pubescent, densely pubescent at veins, palmately 3–5-parted; central lobe rhombic or broadly rhombic, margin with orbicular teeth; lateral lobes obliquely flabellate, unequally 2- or 3-parted. Inflorescence terminal, 4–10-flowered; rachis and pedicels retrorse pubescent; bracts leaflike to lanceolate. Pedicels 4–8 mm, with 2 bracteoles at middle or above; bracteoles lanceolate to linear. Sepals yellow, abaxially retrorse pubescent; lower sepals oblong, 6–7 × 2–3 mm; lateral sepals suborbicular, 7–10 × 7–10 mm, adaxially middle and margin yellow villous; upper sepal cylindric, 1–1.3 cm high, middle 4–5 mm in diam., beaked, lower margin ca. 1 cm. Petals glabrous; lip linear, conspicuous; spur circinate, slightly longer than lip. Carpels 3, glabrous. Fl. Jul–Aug.

Grasslands. Nei Mongol (Ergun Zuoqi) [Russia (Far East, Siberia)].

20. *Aconitum kirinense* Nakai, Rep. Exped. Manchoukuo, Sect. 4, 2: 147. 1935.

吉林乌头 ji lin wu tou

Rhizome unknown. Stem 80–120 cm tall, 3–5.5 mm in diam., branched, basally sparsely spreading yellow villous, apically retrorse yellow pubescent. Basal leaves ca. 2, and proximal cauline leaves long petiolate; petiole 20–30 cm, sparsely spreading pilose or nearly glabrous. Cauline leaves 2–6; leaf blade reniform-pentagonal, 12–17 × 20–24 cm, abaxially sparsely pilose at veins or nearly glabrous, adaxially appressed and retrorse pubescent, 3-parted. Inflorescence 18–22 cm, many flowered; rachis and pedicels retrorse and appressed pubescent; proximal bracts leaflike, others linear. Pedicels 0.8–1.2 cm, with 2 bracteoles at middle or below; bracteoles subulate, 1.2–4 mm. Sepals yellow, abaxially densely pubescent; lower sepals narrowly elliptic; lateral sepals broadly obovate, ca. 8 mm; upper sepal cylindric, 1.4–1.8 cm high, 4–5 mm in diam., shortly beaked, lower margin 9–10 mm, slightly concave. Petals glabrous; lip liguliform, ca. 3 mm; spur erect or incurved, slightly shorter than or subequaling lip. Stamens glabrous or sparsely ciliate; filaments entire. Carpels 3; ovary glabrous. Follicles 1–1.2 cm, glabrous. Seeds perigynous, ca. 2.5 mm. Fl. Jul–Sep, fr. Sep.

Grassy or mountain slopes, forest margins, forests. E Heilongjiang, W Henan, NW Hubei, Jilin, Liaoning, SE Shaanxi, S Shanxi [Russia (Far East)].

- 1a. Leaf blade deeply cordate at base, 3-parted slightly beyond middle, lobes with rounded teeth 20c. var. *heterophyllum*
- 1b. Leaf blade broadly cordate at base, 3-parted nearly to base, lobes incised-lobed, sharply dentate.
 - 2a. Leaves abaxially sparsely villous at veins or nearly glabrous; ovary glabrous 20a. var. *kirinense*
 - 2b. Leaves abaxially densely pubescent; ovary usually sparsely yellow pubescent 20b. var. *australe*

20a. *Aconitum kirinense* var. *kirinense*

吉林乌头(原变种) ji lin wu tou (yuan bian zhong)

Lycoctonum kirinense (Nakai) Nakai; *L. kirinense* var. *villipes* Nakai.

Leaf blade broadly cordate at base, abaxially sparsely villous at veins or nearly glabrous, 3-parted nearly to base, lobes incised-lobed, sharply dentate. Ovary glabrous.

Grassy slopes, forest margins, forests. E Heilongjiang, Jilin, Liaoning [Russia (Far East)].

20b. *Aconitum kirinense* var. *australe* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 63. 1965.

毛果吉林乌头 *mao guo ji lin wu tou*

Leaf blade broadly cordate at base, abaxially densely pubescent, 3-parted nearly to base, lobes incised-lobed, sharply dentate. Ovary usually sparsely yellow pubescent.

• Forests, mountain slopes; 800–2000 m. W Henan, NW Hubei, SE Shaanxi, S Shanxi.

20c. *Aconitum kirinense* var. *heterophyllum* W. T. Wang, Act Bot. Yunnan. 15(4): 349. 1993.

异裂吉林乌头 *yi lie ji lin wu tou*

Leaf blade deeply cordate at base, 3-parted slightly beyond middle, lobes with rounded teeth. Carpels appressed yellowish pilose.

• Henan (Lushi Xian).

21. *Aconitum barbatum* Patrin ex Persoon, Syn. Pl. 2: 83. 1806.

细叶黄乌头 *xi ye huang wu tou*

Rhizome suberect, terete, to 15 cm, ca. 8 mm in diam. Stem 55–90 cm tall, below inflorescence branched, basally sparsely spreading pubescent, apically retrorse and appressed pubescent, 2–4-leaved. Basal leaves and proximal cauline leaves long petiolate; petiole 13–30 cm, spreading pubescent, base sheathed; leaf blade reniform or orbicular-reniform, 4–8.5 × 7–20 cm, abaxially villous, adaxially sparsely pubescent, 3-sect; central segment broadly rhombic, 3-parted nearly to midvein; lateral segments obliquely flabellate, unequally 2-fid. Inflorescence terminal, 13–20 cm, densely flowered; rachis and pedicels densely appressed pubescent; proximal bracts narrowly linear, 4.5–7.5 mm, middle ones lanceolate-subulate, ca. 2.5 mm, distal ones triangular, 1–1.5 mm, pubescent. Pedicels 0.2–1 cm, with 2 bracteoles near middle; bracteoles narrowly triangular, 1.2–1.5 mm. Sepals yellow, abaxially densely pubescent; lower sepals ca. 6 mm; lateral sepals ca. 7 mm; upper sepal erect, cylindrical, 1.3–1.7 cm high, ca. 3.8 mm in diam., lower margin suberect, 1–1.2 cm. Petals glabrous; lip linear, ca. 2.5 mm; spur erect or slightly curved, slightly shorter than lip. Stamens glabrous or pubescent; filaments entire. Carpels 3. Follicles ca. 1 cm, sparsely appressed pubescent. Seeds brown, obovate, ca. 2.5 mm. Fl. Jul–Aug. $2n = 16$.

Grassy slopes, forests, wet places; 400–2700 m. Gansu, N and W Hebei, Heilongjiang, W Henan, Jilin, Nei Mongol, Ningxia, Shaanxi, Shanxi, Xinjiang [Russia (Far East, Siberia)].

1a. Stem and petioles retrorse and appressed pubescent 21c. var. *puberulum*

1b. Stem below middle and petioles spreading pubescent.

2a. Central segment 3-parted nearly to midvein, ultimate lobes narrowly lanceolate to linear 21a. var. *barbatum*

2b. Central segment 3-parted not nearly to midvein, ultimate lobes triangular to narrowly lanceolate 21b. var. *hispidum*

21a. *Aconitum barbatum* var. *barbatum*

细叶黄乌头(原变种) *xi ye huang wu tou (yuan bian zhong)*

Aconitum barbatum var. *gmelinii* (Reichenbach) Ledebour ex Maximowicz; *A. gmelinii* Reichenbach; *A. leptanthum* Reichenbach; *A. lycoctonum* Linnaeus var. *barbatum* (Persoon) Finet & Gagnepain; *A. pyrenaicum* Linnaeus; *A. squarrosum* de Candolle; *Lycoctonum barbatum* (Persoon) Nakai.

Stem below middle and petioles spreading pubescent. Central leaf segment 3-parted nearly to midvein; ultimate lobes narrowly lanceolate to linear.

• Grassy slopes, forests, forest margins; 400–900 m. W Heilongjiang.

21b. *Aconitum barbatum* var. *hispidum* (de Candolle) Serange in de Candolle, Prodr. 1: 58. 1824.

西伯利亚乌头 *xi bo li ya wu tou*

Aconitum hispidum de Candolle, Syst. Nat. 1: 367. 1818; *A. sibiricum* Poiret; *Lycoctonum sibiricum* (Poiret) Nakai.

Stem below middle and petioles spreading pubescent. Central leaf segment 3-parted not nearly to midvein; ultimate lobes triangular to narrowly lanceolate. $2n = 16^*$.

Grassy slopes, forests, 400–2200 m. Gansu, N and W Hebei, Heilongjiang, W Henan, Jilin, Nei Mongol, Ningxia, Shaanxi, Shanxi, Xinjiang [Russia (Siberia)].

21c. *Aconitum barbatum* var. *puberulum* Ledebour, Fl. Ross. 1: 67. 1842.

牛扁 *niu bian*

Aconitum barbatum subsp. *pekinense* (Voroschilov) Gubanov; *A. luteum* H. Léveillé & Vaniot; *A. ochranthum* C. A. Meyer; *A. pekinense* Voroschilov; *Lycoctonum ochranthum* (C. A. Meyer) Nakai.

Stem and petioles retrorse and appressed pubescent. Central leaf segment 3-parted not nearly to midvein; ultimate lobes triangular or narrowly lanceolate. $2n = 16^*$.

Forests, wet places; 400–2700 m. Hebei, Liaoning, Nei Mongol, Shanxi, E Xinjiang [Mongolia, Russia (Siberia)].

22. *Aconitum fletcheranum* G. Taylor, J. Roy. Hort. Soc. London 77: 242. 1952.

多花乌头 *duo hua wu tou*

Rhizome terete, branched. Stem 5–19 cm. Leaves all basal; petiole 2.5–14.5 cm, slender, glabrous, base sheathed; leaf blade orbicular-cordate or reniform, 1–3 × 2–4 cm, palmately or pedately 3–5-parted; lobes obovate-cuneate, 2- or 3-lobed; ultimate lobes ovate or oblong, apex acute or mucronate. Scapes 1–4, erect, 6.5–14 cm tall, distally retrorse pubescent; bracts 2,

stalked, similar to leaves but smaller, at distal part of pedicels. Flower solitary, terminal. Sepals blue-purple, glabrous or abaxially sparsely pubescent; lower sepals broadly obovate, or suborbicular, ca. 2 × 2 cm; upper sepal navicular, shortly beaked, ca. 3 × 0.9–1.2 cm from base to beak. Petals ca. 2 cm, glabrous; claw slender; limb ca. 3 mm; lip very short, entire or slightly concave; spur narrowly cylindrical. Stamens distally

puberulous or glabrous; filaments broadly lanceolate. Carpels 6–8, sparsely pubescent. Fl. Jul–Oct. Wet places on slopes, grassy slopes; 4300–5100 m. SE Xizang [Bhutan; NE India (Assam)]. This species belongs to *Aconitum* sect. *Fletcherum* Tamura characterized by the upper sepal navicular; petaline lip very short; spur narrowly cylindrical, almost degenerated, and carpels 6–8.

2. *Aconitum* subgen. *Aconitum*

乌头亚属 *wu tou ya shu*

Caudices usually 2, rarely several. Sepals not clawed or nearly so; upper sepal galeate, navicular, or falcate, rarely cylindrical. Petaline limb with secretory tissue at apex or abaxially; lip indistinct or distinct, ligulate or linear; spur short or long, rarely absent. Carpels 3–5(–9).

About 340 species: Asia, Europe, North America; 188 species (156 endemic) in China.

23. *Aconitum tanguticum* (Maximowicz) Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 151. 1905

甘青乌头 *gan qing wu tou*

Caudex fusiform or obconical, ca. 2 cm. Stem 8–50 cm tall, simple or branched, sparsely retrorse and appressed pubescent or nearly glabrous. Basal leaves 7–9, long petiolate; petiole 3.5–14 cm, glabrous, base sheathed; leaf blade orbicular or orbicular-reniform, 1.1–3 × 2–6.8 cm, both surfaces glabrous, medially 3-lobed; lobes lobulate, margin orbicular dentate. Cauline leaves 1 or 2(–4), usually shortly petiolate, smaller than basal leaves. Inflorescence terminal, 3–5-flowered; rachis and pedicels ± densely retrorse pubescent; bracts linear, or sometimes basal ones 3-fid. Proximal pedicels (1–)2.5–4.5(–6.5) cm, distal ones shorter, with 2 bracteoles; bracteoles ovate to broadly linear, 2–2.5 mm. Sepals blue-purple, rarely greenish, abaxially pubescent; lower sepals broadly elliptic or elliptic-ovate; lateral sepals 1.1–2.1 cm long and wide; upper sepal navicular, 6–8 mm wide, lower margin slightly concave or suberect, 1.4–2.2 cm high. Petals slightly curved, glabrous; limb very small, 0.6–1.5 mm; lip indistinct, slightly concave; spur erect, short. Stamens sparsely pubescent; filaments entire or 2-denticulate. Carpels 5, pubescent or glabrous. Follicles ca. 1 cm. Seeds obovate, 2–2.5 mm. Fl. Jul–Aug. $2n = 16^*$.

• Grassy slopes, wet and alpine grasslands; 3200–4800 m. S Gansu, E Qinghai, Shaanxi, W Sichuan, E Xizang, NW Yunnan.

1a. Ovary glabrous 23a. var. *tanguticum*

1b. Ovary pubescent 23b. var. *trichocarpum*

23a. *Aconitum tanguticum* var. *tanguticum*

甘青乌头(原变种) *gan qing wu tou (yuan bian zhong)*

Aconitum rotundifolium Karelina & Kirilov var. *tanguticum* Maximowicz, Fl. Tangut. 26. 1889; *A. tanguticum* f. *viridulum* W. T. Wang.

Ovary glabrous.

• Grassy slopes, wet grasslands; 3200–4800 m. S Gansu, E Qinghai, Shaanxi (Qin Ling), W Sichuan, E Xizang, NW Yunnan.

23b. *Aconitum tanguticum* var. *trichocarpum* Handel-Mazetti, Acta Horti Gothob. 13: 91. 1939.

毛果甘青乌头 *mao guo gan qing wu tou*

Aconitum iochanicum Ulbrich var. *robustum* Chen & Liu; *A. tanguticum* var. *trichocarpum* f. *robustum* (Chen & Liu) W. T. Wang.

Ovary pubescent.

• Alpine grasslands; 3500–4600 m. S Gansu, E Qinghai, W Sichuan, NW Yunnan (Dêqên Xian).

24. *Aconitum qinghaiense* Kadota, J. Jap. Bot. 76: 185. 2001.

青海乌头 *qing hai wu tou*

Caudex carrot-shaped, 1–3 cm. Stem 10–30(–70) cm tall, simple, sparsely retrorse and appressed pubescent. Basal leaves 7–9, long petiolate; petiole 5–8 cm, glabrous, base sheathed; leaf blade orbicular-reniform, 3–4 × 3.5–5 cm, both surfaces glabrous, medially 5–9-lobed; lobes lobulate, margin orbicular dentate. Cauline leaves 2 or 3, usually shortly petiolate, smaller. Inflorescence terminal, 2–4-flowered; rachis and pedicels ± densely retrorse pubescent; bracts linear, or sometimes basal ones 3-fid. Pedicels 5–10 mm, with 2 bracteoles; bracteoles linear, ca. 5 mm. Sepals pale greenish white or sometimes bright blue-violet, abaxially pubescent; lower sepals broadly elliptic or elliptic-ovate; lateral sepals 1.7–1.8 cm long and wide; upper sepal navicular, ca. 2 cm wide, lower margin concave, ca. 1 cm high. Petals slightly curved, glabrous; limb ca. 5 mm; lip strongly reflexed, ca. 1 mm; spur cup-shaped. Stamens glabrous or sparsely pubescent; filaments 2-denticulate. Carpels 4 or 5, glabrous. Follicles unknown. Immature seeds smooth, not lamellate. Fl. Jul–Aug.

• Grassy slopes, wet and alpine grasslands; 2700–3600 m. SW Gansu, SE Qinghai, SE Xizang.

25. *Aconitum spiripetalum* Handel-Mazzetti, *Acta Horti Gothob.* 13: 91. 1939.

螺瓣乌头 *luo ban wu tou*

Caudex unknown. Stem 18–45(–70) cm tall, simple or branched, retrorse and appressed pubescent. Basal leaves 7–9, long petiolate; petiole 2.5–9.5 cm; leaf blade orbicular or orbicular-reniform, 2.2–5.2(–6.2) cm, 3-parted. Cauline leaves 1 or 2, usually shortly petiolate, smaller than basal leaves. Inflorescence terminal, 2–5-flowered; rachis densely retrorse pubescent; basal bracts leaflike or 3-fid, distal bracts linear. Pedicels 1–3.5 cm, retrorse white and spreading yellowish pubescent, with 2 bracteoles at middle or above; bracteoles linear, 2–7 mm. Sepals pale blue or dark purple, abaxially sparsely pubescent; lower sepals 1.2–1.5 cm; lateral sepals 1.4–1.8 cm; upper sepal navicular-galeate. Petals glabrous; claw slender, apex spirally curved; limb very short, ca. 1.5 mm; lip indistinct; spur subglobose, short. Stamens pubescent; filaments pubescent, entire. Carpels 5, sparsely spreading villous. Follicles ca. 1.5 cm. Seeds obovate, ca. 2.5 cm, smooth. Fl. Aug–Sep.

• Grassy slopes; 3600–4300 m. W Sichuan.

26. *Aconitum naviculare* (Brühl) Stapf, *Ann. Roy. Bot. Gard. (Calcutta)* 10: 154. 1905.

船盔乌头 *chuan kui wu tou*

Aconitum ferox Wallich var. *naviculare* Brühl, *Ann. Roy. Bot. Gard. (Calcutta)* 5: 111. 1896.

Caudex carrot-shaped or fusiform, small, 0.8–1.5 cm. Stem 5–30(–45) cm tall, simple or basally branched, basally glabrous, apically sparsely retrorse and appressed pubescent. Basal leaves long petiolate; petiole 2.5–14 cm, glabrous, base without distinct sheath; leaf blade reniform-pentagonal or reniform, 1–2 × 1.4–3 cm, abaxially glabrous, adaxially sparsely pubescent, 3-parted nearly to middle; central lobe rhombic-obtrapezoid; lateral lobes obliquely flabellate, unequally 2-fid nearly to middle. Cauline leaves 1–3, shortly petiolate. Inflorescence 1–5-flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike, others linear. Proximal pedicels 2.5–6 cm, distal ones ca. 2 cm, with 2 distal bracteoles or bordering flower, bracteoles linear, 6–7 × 0.5–1 mm. Sepals violet or purple, abaxially sparsely pubescent; lower sepals ca. 1 cm; lateral sepals ca. 1.6 cm; upper sepal navicular, ca. 1.6 cm from base to beak, lower margin slightly concave or suberect. Petals glabrous; claw slender; limb small, ca. 2.5 mm; lip ca. 1.5 mm, slightly concave; spur ± headlike, ca. 1 mm, slightly concave. Stamens sparsely pubescent; filaments sparsely pubescent, entire or 2-denticulate. Carpels 5, sparsely pubescent. Follicles 1–1.2 cm. Seeds obpyramidal, ca. 2 mm. Fl. Sep.

Scrub forests, grassy slopes; 3200–5000 m. S Xizang [Bhutan, Sikkim].

27. *Aconitum creagromorphum* Lauener, *Notes Roy. Bot. Gard. Edinburgh* 25: 12. 1963.

叉苞乌头 *cha bao wu tou*

Caudex unknown. Stem 3–10 cm tall, simple, white pubescent, basally usually glabrous. Leaves numerous, subbasal, long petiolate; petiole 2–8 cm; leaf blade cordate-orbicular or cordate-reniform, 1.5–3.5 × 1.5–3.5 cm, abaxially glabrous or sparsely pubescent at veins, adaxially pubescent, 3-parted; lobes obovate or cuneate, 3-fid, sometimes unlobed, margin incised-dentate. Inflorescence 1–3-flowered; bracts sessile, leaflike. Pedicels suberect upward, 2–7 cm, spreading white pubescent, usually distally with 2 bracteoles; bracteoles 1.5–4 mm, 3-fid; lobes narrowly long, with long stipes 0.8–1.2 cm. Sepals pale red-purple or purple-blue, pubescent; lower sepals elliptic or obovate, 1–3 cm; lateral sepals broadly obovate-orbicular, to 2 cm; upper sepal navicular, ca. 2 cm from base to beak, lower margin suberect. Petals glabrous, 1.5–1.8 cm; claw slender; lip liguliform, ca. 2.2 mm, slightly concave; spur slightly curved, headlike, ca. 1 mm. Stamens sparsely pubescent, ca. 5 mm; filaments entire. Carpels 5, densely pubescent. Fl. Oct.

• Alpine grasslands; 4600–4700 m. S Xizang (Cona Xian, Nang Xian).

28. *Aconitum rotundifolium* Karelin & Kirilov, *Bull. Soc. Imp. Naturalistes Moscou* 15: 138. 1842.

圆叶乌头 *yuan ye wu tou*

Caudices in pairs, ca. 2 cm. Stem 15–42 cm tall, simple or branched, sparsely retrorse and appressed pubescent. Proximal cauline leaves 3 or 4, long petiolate; petiole 4.2–20 cm, retrorse pubescent, base sheathed; leaf blade orbicular-reniform, 2–5.8 × 3–6.5 cm, both surfaces glabrous or veins and leaves pubescent at margin, 3-parted; central lobe obtrapezoid, 3-fid, lobes several ovate-lobulate or orbicular-dentate; lateral lobes flabellate, unequally 3-fid slightly beyond middle. Inflorescence 3–5-flowered; rachis and pedicels appressed or spreading pubescent; proximal bracts leaflike or 3-fid, others linear, ca. 1.1 × 0.2 cm. Pedicels 2.5–7 mm, with 2 bracteoles at or above middle; bracteoles linear, 5–7 × ca. 0.6 mm. Sepals purplish, abaxially pubescent; lower sepals ca. 1.1 cm; lateral sepals obliquely obovate, 1.3–1.6 cm; upper sepal falcate or navicular-falcate, lower margin 1.4–1.8 cm. Petals glabrous; limb very short, 1–5 mm, lower part 2-fid; spur slightly curved, headlike. Stamens sparsely pubescent; filaments entire. Carpels 5, densely white pubescent. Follicles 0.9–1.3 cm. Seeds obovate, 2.5–3 mm. Fl. Aug.

Alpine grasslands; ca. 3100 m. Xinjiang [?Afghanistan, Kashmir, ?Nepal, Russia (C Asian Region)].

29. *Aconitum changianum* W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 94. 1965.

察瓦龙乌头 *cha wa long wu tou*

Caudex carrot-shaped, ca. 1.8 cm, ca. 5 mm in diam. Stem 20–35 cm, simple or 1-branched below inflorescence, retrorse and appressed pubescent, with 4

cauline leaves equally arranged along stem. Basal leaves 2 or 3, and most proximal cauline leaves long petiolate; petiole 6–7.5 cm, nearly glabrous; leaf blade pentagonal-reniform, 2.4–2.7 × ca. 5 cm, abaxially glabrous, adaxially sparsely appressed pubescent, base cordate, 3-parted; central lobe obovate-rhombic, apically 3-sect, lobes 1- or 2-lobulate or dentate; lateral lobes obliquely flabellate, unequally 2-parted.

Inflorescence 4–10 cm, 2–5-flowered; rachis and pedicels slightly spreading yellow pubescent; bracts leaflike. Pedicels 2–4.6 cm, with 2 bracteoles at middle or base, bracteoles 4–5 mm, lowermost ones 3-fid, others linear. Sepals violet, both surfaces sparsely pubescent; lateral sepals ca. 1.4 cm; upper sepal galeate, ca. 9 mm high, shortly beaked, 1.5–1.8 cm from base to beak, lower margin slightly concave; lower sepals ca. 1.2 cm. Petals ca. 2 cm, sparsely pubescent; limb ca. 7 × 2 mm; lip ca. 2.5 mm; spur incurved, ca. 2 cm, sparsely pubescent. Stamens glabrous; filaments 2-denticulate. Carpels 3, densely yellow villous. Fr. Aug.

• Mountain slopes; ca. 3500 m. SE Xizang (Zayü Xian), ?Yunnan.

30. *Aconitum longipetiolatum* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 11. 1963.

长柄乌头 *chang bing wu tou*

Caudex ovate or carrot-shaped, 2.5–3 cm, ca. 1 cm in diam. Stem erect, to 60 cm tall, simple, basally becoming glabrous, apically retrorse pubescent. Leaves long petiolate; petiole ca. 3 × as long as blade, glabrous; leaf blade orbicular-pentagonal, 3–7 × 4–8 cm, 3-parted nearly to base; central lobe broadly rhombic, 3-fid ± to middle, margin with several narrowly ovate to ovate lobules; lateral lobes ca. 2 × as wide as central lobe, unequally 2-parted. Inflorescence to 16 cm, many flowered, sometimes only 1-flowered, rachis and pedicels retrorse pubescent; bracts nearly sessile, leaflike, pubescent. Pedicels to 4.5 cm, with 2 bracteoles above middle; bracteoles leaflike, broadly ovate, to 1 cm. Sepals blue-violet, pubescent; lower sepals oblong or elliptic, 1–1.2 × ca. 0.5 cm; lateral sepals obliquely broadly obovate, ca. 1.7 × 0.8 cm; upper sepal navicular, ca. 2 cm high, shortly beaked, lower margin suberect or slightly concave. Petals ca. 2 cm, pubescent; claw curved, slender; lip slightly concave at apex; spur incurved, ca. 1.5 mm. Stamens pubescent distally; filaments entire. Carpels 5–7, densely sericeous. Fr. Aug–Sep.

• Forests, by streams; 4000–4700 m. SE Xizang.

31. *Aconitum ichangense* (Finet & Gagnepain) Handel-Mazetti, Acta Horti Gothob. 13: 111. 1939.

巴东乌头 *ba dong wu tou*

Aconitum semigaleatum Pallas ex Reichenbach var. *ichangense* Finet & Gagnepain, Bull. Soc. Bot. France 51: 511. 1904.

Caudex narrowly obconical, ca. 1.6 cm. Stem 14–30 cm tall, slightly zigzag, branched or simple, spreading pubescent, distally subcorymbose, with 3–5 leaves equally arranged along stem. Basal leaves 1 or 2, and

proximal cauline leaves long petiolate; petiole 5–10 cm; leaf blade reniform-pentagonal, 2–2.8 × 4–5.4 cm, 3-parted; central lobe rhombic-obovate, 3-lobed, upper margin obtuse-dentate; lateral lobes obliquely flabellate, unequally 2-fid slightly beyond middle. Flower solitary, terminal; rachis and pedicels spreading pubescent.

Pedicels 4–8 cm, distally with 2 bracteoles; bracteoles elliptic, ca. 7 mm. Sepals yellowish, abaxially sparsely pubescent; lower sepals broadly or narrowly elliptic; lateral sepals orbicular-obovate, ca. 1.6 cm; upper sepal navicular or navicular-galeate, beaked, 2–2.3 cm from base to beak. Petals glabrous; limb ca. 7 mm; lip ca. 3 mm; spur incurved, ca. 2 mm. Stamens glabrous; filaments entire. Carpels 3, white pubescent.

• W Hubei.

32. *Aconitum iochanicum* Ulbrich, Bot. Jahrb. Syst. 48: 616. 1913.

滇北乌头 *dian bei wu tou*

Caudex subglobose or terete, 0.8–2.5 cm, 3.5–5 mm in diam. Stem 10–30 cm tall, simple, basally sparsely retrorse and appressed pubescent or becoming glabrous, apically densely pubescent, 2–5-leaved. Basal leaves ca. 2, and proximal cauline leaves long petiolate; petiole 4–9 cm, sparsely pubescent; leaf blade orbicular-pentagonal, 1.2–2 × 2–3.4 cm, both surfaces sparsely yellow pubescent, 3-parted; central lobe broadly rhombic or flabellate-rhombic, 3-sect; lateral lobes obliquely flabellate, unequally 2-fid ± to middle. Inflorescence 1–4-flowered; rachis and pedicels densely spreading and retrorse yellow pubescent; proximal bracts 3-fid, distal ones subulate, very small. Pedicels suberect upward, 1.2–4 cm, with 2 bracteoles at middle or below; bracteoles linear, ca. 0.8 mm. Sepals yellow, abaxially sparsely yellow pubescent; lateral sepals 1.3–1.5 cm; upper sepal galeate or navicular-galeate, shortly beaked, 1.8–2 cm from base to beak, lower margin suberect or slightly concave. Petals glabrous; limb ca. 8 mm; lip slightly concave; spur 1.2–2.5 mm, spreading backward. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3 or 5, densely yellow villous. Fl. Aug–Oct.

• Grassy slopes; 3700–3800 m. NE Yunnan.

33. *Aconitum alpinonepalense* Tamura, Acta Phytotax. Geobot. 23: 100. 1968.

高峰乌头 *gao feng wu tou*

Caudex narrowly obovate-globose, ca. 1.5 cm, ca. 7 mm in diam. Stem 10–30 cm, simple, sparsely retrorse pubescent. Basal leaves long petiolate; petiole to 55 cm, sparsely retrorse pubescent; leaf blade reniform, ca. 1.7 × 3 cm, papery, both surfaces glabrous, 3-parted to ca. 2.5 mm from base; central lobe cuneate, 3-sect; lateral lobes obliquely flabellate, unequally 2-parted. Cauline leaves ca. 3, those below middle similar to basal ones; distal leaves subsessile, small, 3-sect; lobules linear. Inflorescence 1–3-flowered; bracts leaflike. Pedicels 1.5–4(–5.5) cm, retrorse white pubescent and spreading

yellow pubescent, distally with 2 bracteoles; bracteoles subulate, 2.5–3 mm. Sepals blue-purple, abaxially sparsely pubescent; lateral sepals 1.7–1.9 cm; upper sepal navicular-galeate or navicular, 2–2.5 × ca. 1 cm from base to beak; lower sepals ca. 1.7 cm. Petals sparsely pubescent; lip ca. 4 mm; spur very short, indistinct. Stamens densely pubescent distally; filaments entire. Carpels 5, densely yellow villous. Fl. Aug–Sep.

• Mountain slopes; ca. 4700 m. S Xizang (Nyalam Xian).

34. *Aconitum pulchellum* Handel-Mazzetti, Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 62: 219. 1925.

美丽乌头 *mei li wu tou*

Caudex obconical, small, ca. 7 mm. Stem 6–30(–50) cm, simple, glabrous or spreading pubescent, with 1 or 2 leaves. Basal leaves 2 or 3, long petiolate; petiole 2.5–14.5 cm, glabrous, base shortly sheathed; leaf blade orbicular-pentagonal, 1–2 × 2–3.5 cm, 3-sect or -parted nearly to base; ultimate lobes narrowly ovate or orbicular-linear, 1–3 mm wide. Cauline leaves 1 or 2, at middle or below, shortly petiolate. Inflorescence 1–9-flowered; proximal bracts leaflike, distal ones linear. Pedicels 2–6 cm, retrorse pubescent, distally with few spreading hairs, with 2 bracteoles at middle; bracteoles linear, 3–5 mm. Sepals blue, adaxially sparsely pubescent or nearly glabrous; lateral sepals 1.3–1.6 cm; upper sepal galeate-navicular or galeate, 1.7–2 cm from base to beak. Petals glabrous or sparsely pubescent; lip ca. 3 mm, slender; spur curved, ca. 1.5 mm. Stamens glabrous or sparsely pubescent; filaments entire. Carpels 5, spreading yellow pubescent. Fr. Aug–Sep. $2n = 16^*$.

Scrub, grassy slopes, alpine areas; 3500–4500 m. SW Sichuan, SE Xizang, NW Yunnan [Bhutan, Myanmar, ?Nepal, Sikkim].

- 1a. Stem spreading pubescent; inflorescence 5–9-flowered; stamens sparsely pubescent 34c. var. *racemosum*
- 1b. Stem glabrous; inflorescence 1–4-flowered; stamens glabrous.
 - 2a. Petaline spur glabrous 34a. var. *pulchellum*
 - 2b. Petaline spur sparsely pubescent 34b. var. *hispidum*

34a. *Aconitum pulchellum* var. *pulchellum*

美丽乌头(原变种) *mei li wu tou* (*yuan bian zhong*)
Stem glabrous. Inflorescence 1–4-flowered. Petaline spur glabrous. Stamens glabrous.

Grassy slopes, 3500–4500 m. SW Sichuan, SE Xizang, NW Yunnan [Bhutan, Myanmar, Sikkim].

34b. *Aconitum pulchellum* var. *hispidum* Lauener, Notes Roy. Bot. Gard. Edinburgh 23: 10. 1963.

毛瓣美丽乌头 *mao ban mei li wu tou*

Stem glabrous. Inflorescence 1–4-flowered. Petaline spur sparsely pubescent. Stamens glabrous.

• Scrub; 4000–4500 m. SE Xizang, NW Yunnan.

34c. *Aconitum pulchellum* var. *racemosum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 605. 1979.

长序美丽乌头 *chang xu mei li wu tou*

Stem spreading pubescent. Inflorescence 5–9-flowered. Stamens sparsely pubescent.

• Alpine areas on mountains; ca. 4200 m. NW Yunnan (Dêqên Xian).

35. *Aconitum hamatipetalum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 95. 1965.

钩瓣乌头 *gou ban wu tou*

Caudex carrot-shaped or obconical, small, to 1.5 cm. Stem 13–36 cm tall, glabrous. Basal leaves 1–3, long petiolate; petiole 4–14 cm; leaf blade orbicular-pentagonal, 1–1.5 × 2.2–4 cm, 3-sect or -parted nearly to base; ultimate lobes narrowly ovate or lanceolate, 1.5–4 mm wide. Inflorescence 2- or 3-flowered; bracts broadly linear. Pedicels 1–5 cm, with 2 bracteoles at middle; bracteoles linear. Sepals blue-purple; lower sepals broadly elliptic, slightly oblique; lateral sepals 1.3–1.6 cm; upper sepal navicular-galeate, shortly beaked, lower margin suberect or slightly concave, 2–2.5 cm. Petals 9–10 mm, glabrous; claw narrowly hooklike at apex and decurved. Stamens pubescent; filaments entire. Carpels 5, densely spreading pubescent; persistent style glabrous, nearly 2-fid at apex. Fr. Aug–Sep.

• Grasslands; ca. 4000 m. NW Yunnan.

36. *Aconitum sinchiangense* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 605. 1979.

新疆乌头 *xin jiang wu tou*

Caudex unknown. Stem 25–30 cm, simple, sparsely pubescent. Basal leaves ca. 10, long petiolate; petiole 5–10 cm, glabrous; leaf blade semilunate or orbicular-pentagonal, 3–5.5 × 3.6–7 cm, 3-sect or -parted nearly to base; central segment obliquely flabellate, unequally 2-parted, both surfaces glabrous. Cauline leaf petiole 1–2.8 cm; leaves smaller above, ultimate lobes 1–2 mm wide. Inflorescence to 10 cm, 3–12-flowered; rachis and pedicels sparsely spreading pubescent; basal bracts leaflike, others linear. Proximal pedicels to 6 mm, distal ones 1–3 mm, with 2 bracteoles at middle; bracteoles subulate, 2.5–4 mm. Sepals purple-blue, adaxially subglabrous; lateral sepals 1.2–1.5 cm; upper sepal falcate-navicular, 1.6–2 cm from base to beak, lower margin arciform-curved. Petals glabrous, ca. 2 cm; limb linear, 5.6–6.5 × ca. 1.4 mm; spur subglobose, 0.6–0.9 mm. Stamens glabrous. Carpels 5, glabrous. Fr. Aug.

• Mountain slopes; ca. 2600 m. Xinjiang.

37. *Aconitum coriophyllum* Handel-Mazzetti, Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 62: 220. 1925.

厚叶乌头 *hou ye wu tou*

Caudex terete, to 10 cm, ca. 1 cm diam. Stem 23–95 cm tall, simple or shortly branched below inflorescence, densely pubescent, sparsely 1- or 2-leaved. Basal leaves 1–3, long petiolate; petiole 18–21 cm; leaf blade suborbicular, 7–10 × 10–21 cm, subleathery, both surfaces becoming glabrous, base deeply cordate, 3-parted to subbase; central lobe broadly obtuse-trapezoid, 3-

lobed, margin dentate; lateral lobes flabellate, 2-lobed to middle. Cauline leaves shortly petiolate, small. Inflorescence ca. 15 cm, sparsely flowered; rachis and pedicels densely spreading pubescent; bracts small, lowermost 3-fid, distal ones lanceolate. Proximal pedicels to 2 cm, to 4 cm at fruiting, distal ones shorter, with 2 bracteoles at middle; bracteoles linear-lanceolate, small. Sepals green-yellow, both surfaces spreading pubescent; lower sepals ca. 1 cm; lateral sepals ca. 1.1 cm; upper sepal oblique upward, galeate-navicular, lower margin slightly concave, 2.2–2.4 cm. Petals sparsely pubescent; lip small, slightly concave; spur incurved, saccate, short. Stamens glabrous; filaments entire. Carpels 5, densely hispid. Follicles erect, ca. 2 cm. Seeds 3–3.5 mm wide. Fl. Oct.

•Mountains; ca. 2600 m. NW Yunnan (Zhongdian Xian).

38. *Aconitum nagarum* Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 176. 1905.

保山乌头 *bao shan wu tou*

Caudex subterete or carrot-shaped. Stem 50–70(–100) cm tall, simple or branched, basally becoming glabrous, apically sparsely curved and appressed pubescent. Basal leaves and subbasal cauline leaves long petiolate; petiole to 48 cm, nearly glabrous, base shortly sheathed; leaf blade pentagonal-reniform, 5–8.5 × 10–15 cm, papery or leathery, abaxially sparsely appressed pubescent, adaxially nearly glabrous, 3-sect, sometimes nearly to base; central segment rhombic or obovate-rhombic, 3-fid, ultimate lobes narrowly ovate or narrowly lanceolate; lateral segment obliquely flabellate, unequally 2-parted. Cauline leaves 1–3, similar to basal ones but smaller. Inflorescence narrowly long, 12–30 cm, 6–25-flowered; proximal bracts leaflike, distal ones narrowly ovate; rachis and pedicels densely curved and appressed white pubescent. Pedicels 2–4.5 cm, proximally with 2 bracteoles; bracteoles narrowly ovate, 3–4 mm. Sepals blue-purple, abaxially white pubescent; lower sepals ca. 1.1 cm; lateral sepals orbicular-obovate, ca. 1.2 cm; upper sepal navicular-galeate, oblique upward, shortly clawed, shortly beaked, ca. 1.8 cm from base to beak, lower margin slightly concave. Petals glabrous; limb ca. 7 mm; lip ca. 2.5 mm; spur incurved, ca. 1.5 mm or ecalcarate. Stamens glabrous; filaments entire. Carpels 5, densely white pubescent. Fl. Oct. $2n = 16^*$.

Forest margins, scrub, grassy slopes; 1800–3800 m. Yunnan [NE India, N Myanmar].

- 1a. Filaments yellow pubescent distally; caudex carrot-shaped; stem ca. 50 cm tall 38c. var. *lasiandrum*
- 1b. Filaments glabrous; caudex terete; stem 70–100 cm tall.
 - 2a. Rachis and pedicels densely curved and appressed white pubescent; ovary densely white pubescent 38a. var. *nagarum*

- 2b. Rachis and pedicels curved white pubescent and spreading glandular pubescent; ovary densely yellow or yellowish pubescent or glabrous

..... 38b. var. *heterotrichum*

38a. *Aconitum nagarum* var. *nagarum*

保山乌头(原变种) *bao shan wu tou* (*yuan bian zhong*)

Aconitum nagarum f. *ecalcaratum* (Airy-Shaw) W. T. Wang; *A. nagarum* var. *ecalcaratum* (Airy-Shaw) Airy-Shaw; *A. venatorium* Diels; *A. venatorium* var. *ecalcaratum* Airy-Shaw.

Caudex terete. Stem 70–100 cm tall. Rachis and pedicels densely curved and appressed white pubescent. Filaments glabrous. Ovary densely white pubescent.

Scrub, grassy slopes; 1800–3000 m. Yunnan [NE India, N Myanmar].

38b. *Aconitum nagarum* var. *heterotrichum* H. R. Fletcher

& Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 203. 1950.

小白撑 *xiao bai cheng*

Aconitum acaule Diels; *A. bullatifolium* H. Léveillé; *A. bullatifolium* var. *dielsianum* (Airy-Shaw) H. R. Fletcher & Lauener; *A. bullatifolium* var. *leiocarpum* W. T. Wang; *A. dielsianum* Airy-Shaw; *A. nagarum* var. *heterotrichum* f. *dielsianum* (Airy-Shaw) W. T. Wang; *A. nagarum* var. *heterotrichum* f. *leiocarpum* (W. T. Wang) W. T. Wang.

Caudex terete. Stem 70–100 cm tall. Rachis and pedicels curved white pubescent and spreading glandular pubescent. Filaments glabrous. Ovary densely ± yellow pubescent or glabrous.

•Forest margins, grassy slopes; 2500–3800 m. Yunnan.

38c. *Aconitum nagarum* var. *lasiandrum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 605. 1979.

宣威乌头 *xuan wei wu tou*

?*Aconitum subrosulatum* Handel-Mazzetti.

Caudex carrot-shaped. Stem ca. 50 cm tall. Filaments yellow pubescent distally.

•About 2800 m. Yunnan (Xuanwei Xian).

39. *Aconitum duclouxii* H. Léveillé, Repert. Spec. Nov. Regni Veg. 7: 99. 1909

宾川乌头 *bin chuan wu tou*

Caudex carrot-shaped, ca. 6 cm, ca. 2 cm in diam. Stem 50–100 cm, simple or branched, basally glabrous, apically sparsely retrorse pubescent. Proximal cauline leaves long petiolate; petiole 36–40 cm, nearly glabrous, base shortly sheathed; leaf blade reniform-pentagonal, 12–20 × 16–30 cm, herbaceous, abaxially glabrous, adaxially sparsely pubescent, 3-sect; central segment long stipitate, triangular, ultimate lobes linear-lanceolate or narrowly triangular; middle cauline leaf 1, shortly petiolate, smaller. Inflorescence ca. 40 cm,

many flowered; rachis and pedicels densely retrorse white pubescent and spreading yellow pubescent; basal bracts leaflike, others ovate. Pedicels 2–4.5 cm, with 2 bracteoles at middle or below; bracteoles elliptic or ellipsoid-ovate, 0.8–1.4 cm × 4–4.5 mm. Sepals purple, abaxially mixed white and yellow pubescent; lower sepals ca. 1.4 cm; lateral sepals ca. 1.5 cm; upper sepal navicular-galeate, 1.8–2 cm from base to beak. Petals glabrous; limb ca. 1 cm; lip ca. 5 mm; spur ca. 1 mm. Stamens glabrous; filaments 2-denticulate. Carpels 5, yellowish pubescent. Fl. Sep.

• Mountain slopes, forest margins; 3400–4000 m. Yunnan (Jianchuan Xian).

1a. Petals with a spur ca. 1 mm 39a. var. *duclouxii*

1b. Petals ecalcarate 39b. var. *ecalcaratum*

39a. *Aconitum duclouxii* var. *duclouxii*

宾川乌头(原变种) bin chuan wu tou (yuan bian zhong)

Aconitum nagarum Stapf var. *acaule* (Finet & Gagnepain) Q. E. Yang; *A. napellus* Linnaeus var. *acaule* Finet & Gagnepain.

Petals with a spur ca. 1 mm.

• Forest margins; ca. 3400. NW Yunnan.

39b. *Aconitum duclouxii* var. *ecalcaratum* H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 190. 1950.

无距宾川乌头 wu ju bin chuan wu tou

Petals ecalcarate.

• Mountain slopes, forest margins; ca. 4000 m. Yunnan (Jianchuan Xian).

40. *Aconitum hicksii* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 5. 1963.

同戛乌头 tong jia wu tou

Caudex carrot-shaped, 5–8 cm, 0.7–1.3 cm in diam. Stem ca. 85 cm, simple, glabrous. Proximal cauline leaves withered at anthesis, middle leaves long petiolate; petiole ca. 7 cm, glabrous; leaf blade cordate-pentagonal, ca. 7 × 8 cm, 3-sect; central segment broadly rhombic, subpinnatifid, ultimate lobes narrowly ovate or narrowly triangular; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence ca. 18 cm, ca. 10-flowered; rachis and pedicels densely spreading yellow pubescent; proximal bracts leaflike, others ovate, ca. 8 mm. Pedicels suberect upward, 1.5–3.5 cm, with 2 bracteoles at middle; bracteoles ovate or broadly ovate, ca. 5.5 × 4 mm, apex rounded; lower sepals ca. 1.2 cm; lateral sepals broadly obovate, ca. 1.3 cm; upper sepal galeate, ca. 2 cm high, ca. 1.5 cm from base to beak. Petals glabrous; lip slightly concave at apex; spur incurved, short. Stamens glabrous; filaments entire. Carpels 5, yellow pubescent. Follicles 1.2–1.4 cm. Seeds triquetrous, 2.5–3 mm. Fl. Aug.

On slopes; 3200–4000 m. S Xizang (Cona Xian) [Bhutan].

41. *Aconitum jilongense* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 32(5): 469. 1994.

吉隆乌头 ji long wu tou

Tuber unknown. Stem 50–60 cm, simple, basally appressed and retrorse pubescent, medially spreading pubescent. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 5–17 cm; leaf blade pentagonal, ca. 10 × 13 cm, papery, both surfaces pubescent, base cordate, 3-parted; central lobe broadly rhombic, 3-fid; lateral lobes obliquely flabellate, unequally 2-parted to middle. Inflorescence terminal, ca. 28 cm, many flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike, distal ones narrowly ovate or ovate-lanceolate, ca. 1.1 cm. Pedicels 1–2.3 cm, with 2 bracteoles at middle; bracteoles ovate or broadly ovate, ca. 8 × 4 mm. Sepals purple, abaxially pubescent; lower sepals oblong, ca. 1.2 × 0.6 cm; lateral sepals obliquely broadly obovate, ca. 1.3 × 1.5 cm; upper sepal galeate, ca. 1.2 cm high, ca. 2 cm from base to beak; beak short, ca. 2 mm. Petals sparsely pilose, ca. 2.4 cm; limb ca. 9 mm; lip ca. 4 mm, 2-lobed at apex; spur ca. 1.5 mm. Stamens glabrous; filaments entire. Carpels 5, appressed pubescent. Fl. Aug–Sep.

• Alpine scrub; ca. 3800 m. Xizang (Gyirong Xian).

42. *Aconitum bracteolatum* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 6. 1963.

宽苞乌头 kuan bao wu tou

Caudex unknown. Stem appressed pubescent. Leaves glabrous, proximal cauline leaves with petiole 6–12 cm; leaf blade cordate-pentagonal, ca. 6.5 × 12 cm, 3-sect; central segment broadly rhombic, subpinnatisect, ultimate lobes lanceolate-linear; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence paniclelike, to 35 cm, many flowered; rachis and pedicels retrorse and appressed pubescent; proximal bracts leaflike, distal ones ovate, entire. Pedicels 1–1.5 cm, with 2 bracteoles above middle; bracteoles broadly ovate or suborbicular. Sepals purple, abaxially subglabrous; lower sepals ovate, to 8 mm; lateral sepals obliquely obovate, ca. 1 cm; upper sepal galeate, to 1.5 cm, shortly beaked, to 1.2 cm from base to beak, lower margin slightly suberect. Petals glabrous; lip slightly concave at apex; spur subglobose, short, ca. 1 mm. Stamens glabrous; filaments entire. Carpels 5, appressed pubescent. Fl. Aug–Sep.

• Mountains; ca. 4000 m. SE Xizang.

43. *Aconitum huiliense* Handel-Mazzetti, Symb. Sin. 7: 289. 1931.

会理乌头 hui li wu tou

Caudex unknown. Stem ca. 60 cm, simple, apically and inflorescence densely gray pubescent, ca. 10-leaved. Proximal cauline leaves mostly withered at anthesis, long petiolate; distal ones slightly crowded, shortly petiolate; leaf blade orbicular-pentagonal, ca. 6 × 8 cm, glabrous or sparsely shortly appressed pubescent, base cordate, 3-sect; central segment broadly rhombic, ultimate lobes linear or linear-lanceolate, 2–3 mm wide, apex blunt; lateral segments obliquely flabellate, unequally 2- or 3-parted. Inflorescence ca. 12-

flowered; rachis and pedicels spreading and intermixed retrorse pubescent; proximal bracts leaflike, distal bracts ovate, ca. 1 cm, smaller upward, margin entire. Pedicels 1.5–3 cm, with 2 bracteoles above middle; bracteoles oblong. Sepals blue, pubescent; lower sepals ca. 1.6 cm; lateral sepals ca. 1.8 cm; upper sepal navicular-galeate, lower margin ca. 2 cm, concave. Petals glabrous; claw ca. 2 cm; limb ca. 6 mm; lip ca. 5 mm, 2-lobed, nearly ecalcarate. Stamens glabrous; filaments 2-denticulate. Carpels 5, densely yellow pubescent. Fl. Sep.

• Mountains; 3500–3600 m. SW Sichuan (Huili Xian).

44. *Aconitum wolongense* W. T. Wang, Bull. Bot. Res., Harbin 9(2): 1. 1989.

卧龙乌头 wo long wu tou

Caudex carrot-shaped, ca. 11 cm, ca. 1.4 cm in diam. Stem ca. 92 cm, apically 1-branched, apically sparsely retrorse and appressed pubescent, ca. 11-leaved. Proximal cauline leaves withered at anthesis, and middle leaves long petiolate; petiole 8–15 cm, glabrous; leaf blade cordate-pentagonal, ca. 6.5 × 9 cm, papery, abaxially sparsely sericeous at veins, adaxially appressed pubescent at veins, base deeply cordate, 3-parted; central lobe broadly rhombic, subpinnate lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, ca. 3.8 cm, 2- or 3-flowered; rachis and pedicels appressed and retrorse pubescent; bracts narrowly oblong, to 1.4 cm. Pedicels 0.9–1.3 cm, with 2 bracteoles at distal part or near apex; bracteoles lanceolate-linear or narrowly linear, 3.5–4 mm, glabrous. Sepals purple-blue; lower sepals obliquely broadly rhombic or elliptic, 1–1.1 × 0.65–0.9 cm; lateral sepals obliquely broadly obovate, ca. 1.4 × 1.5 cm, both surfaces sparsely appressed pubescent, apex truncate-rounded; upper sepal navicular, ca. 1.9 cm from base to beak, abaxially sparsely appressed pubescent. Petals glabrous, ca. 1.5 cm; claw ca. 1.3 cm; limb ca. 4 mm, ecalcarate; lip ca. 1.8 mm, apex slightly concave. Stamens glabrous; filaments entire. Carpels 6, densely pale brown pubescent. Fl. ?Jul.

• Sichuan (Wenchuan Xian).

45. *Aconitum pseudohuiliense* Chang ex W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 93. 1965.

雷波乌头 lei bo wu tou

Caudex carrot-shaped, ca. 6 cm, ca. 5 cm in diam. Stem ca. 1 m tall, simple or 1-branched below inflorescence, basally becoming glabrous, apically sparsely retrorse pubescent, ca. 15-leaved. Proximal cauline leaves withered at anthesis, and middle ones long petiolate; petiole 6–15 cm, nearly glabrous; leaf blade orbicular or orbicular-pentagonal, 4.6–6.4 × 7.2–9 cm, both surfaces nearly glabrous, 3-sect; central segment broadly rhombic, ultimate lobes linear-ovate or linear-lanceolate, 3.6–5.5 mm wide, margin entire or with 1 or 2 teeth, apex rounded or blunt, indistinctly shortly acute; lateral segments obliquely flabellate, unequally 2-parted.

Inflorescence ca. 30 cm, 8–12 flowered; rachis and pedicels retrorse and appressed pubescent; bracts leaflike, most distal ones obovate. Pedicels 3–8 cm, distally with 2 bracteoles; bracteoles obovate or broadly elliptic, 0.8–1.3 cm × 3–5 mm. Sepals blue, abaxially sparsely appressed pubescent; lower sepals ca. 1.4 cm; lateral sepals 1.6–1.8 cm; upper sepal galeate or navicular-galeate, shortly beaked, lower margin 2.1–2.5 cm. Petals glabrous; claw ca. 1.7 cm, upper part curved; limb ca. 8 × 3 mm, ecalcarate; lip ca. 4 mm. Stamens pubescent; filaments entire or 2-denticulate. Carpels 5, densely appressed pubescent. Fl. Sep.

• Forests; ca. 3800 m. Sichuan (Leibo Xian).

46. *Aconitum sinoaxillare* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 73. 1965.

腋花乌头 ye hua wu tou

Caudex subterete, ca. 5 cm, ca. 6 mm in diam. Stem ca. 80 cm, simple, sparsely spreading white pubescent, apically becoming glabrous. Basal leaves and proximal cauline leaves long petiolate, withered at anthesis; petiole 2–3 cm, spreading pubescent; leaf blade pentagonal, 4–4.8 × 6–7 cm, both surfaces glabrous, 3-parted nearly to 6 cm from base, central lobe rhombic, apex acuminate; lateral lobes obliquely flabellate, unequally 2-fid nearly to middle. Flower solitary, axillary, 1.5–1.8 cm; rachis and proximal pedicels sparsely spreading pubescent, apically glabrous; bracts leaflike. Pedicels arciform-curved, 4.5–7 cm, with 2 bracteoles at middle; bracteoles leaflike, shortly stalked, 1.5–1.8 × 1.2–1.7 cm, glabrous. Sepals purple, abaxially glabrous, margin sparsely pubescent; lower sepals ca. 0.8 cm; lateral sepals ca. 0.8 cm; upper sepal navicular-galeate, 1–1.2 cm high, 0.8–1.2 cm from base to beak, lower margin oblique upward, slightly concave. Petals glabrous, ca. 8 mm; claw ca. 3.5 mm; lip ca. 2 mm, slightly concave; spur incurved, ca. 1 mm. Stamens glabrous; filaments entire or indistinctly 2-denticulate. Carpels 3, glabrous. Fl. Aug.

• Mountains; ca. 4000 m. E Xizang (Bomi Xian).

47. *Aconitum jinyangense* W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 8: 18. 1980.

金阳乌头 jin yang wu tou

Caudex narrowly obconical, 3.2–4 cm, 1–1.5 cm in diam. Stem ca. 82 cm, simple, glabrous, many leaved. Leaves long petiolate, petiole 2–6 cm, glabrous or subglabrous, proximal cauline leaves withered at anthesis; leaf blade pentagonal, 3.5–7.5 × 4.5–11.5 cm, herbaceous, both surfaces glabrous, base cordate, 3-sect; central segment rhombic, duplicatosect, ultimate lobes linear or narrowly triangular; lateral segments unequally 2-parted. Inflorescence ca. 15 cm, proximally shortly 2-branched, many flowered; rachis proximally sparsely and distally slightly densely appressed pubescent; bracts leaflike. Pedicels 5–10 mm, densely appressed pubescent, with 2 bracteoles near middle; bracteoles linear, ca. 5 mm, glabrous. Sepals dark purple, abaxially appressed pubescent near base, others

glabrous; lower sepals navicular-elliptic; lateral sepals orbicular-obovate, densely ciliate; upper sepal galeate-hemispheric, beaked, lower margin suberect. Petals sparsely pilose; limb ecalcarate at apex; lip reflexed, 2-lobed. Stamens sparsely pilose. Carpels 5, glabrous.

• Grassy slopes. Sichuan (Jinyang Xian).

48. *Aconitum milinense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 74. 1965.

米林乌头 mi lin wu tou

Caudex carrot-shaped, 3.5–4 cm, 5–7 mm in diam. Stem ca. 80 cm, simple, apically sparsely retrorse pubescent, elsewhere becoming glabrous, 12-leaved. Proximal cauline leaves withered at anthesis, middle ones long or shortly petiolate; petiole 2.2–4 cm; leaf blade pentagonal, ca. 7 × 8 cm, abaxially glabrous, adaxially sparsely pubescent or nearly glabrous, 3-parted nearly to 4 mm from base; central lobe broadly rhombic or rhombic, apex acuminate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence ca. 5 cm, 4- or 5-flowered; rachis and pedicels sparsely spreading pubescent; proximal bracts leaflike, shortly stalked, ca. 2 cm; distal ones small, ca. 4 mm. Pedicels 1.7–2.4 cm, oblique upward, with 2 bracteoles at middle; bracteoles linear-subulate, 2–3 mm; Sepals purple, abaxially sparsely pubescent; lower sepals 0.7–0.9 cm; lateral sepals 0.8–1 cm; upper sepal falcate-navicular, 1–1.2 cm from base to beak, lower margin oblique upward. Petals ca. 1 cm, glabrous; claw geniculate-curved at apex; lip ca. 4 mm; spur hemispheric, short, ca. 0.5 mm. Stamens glabrous; filaments 2-denticulate, rarely entire. Carpels 3, glabrous. Fl. Aug.

• Mountains; ca. 3900 m. E Xizang (Mainling Xian).

49. *Aconitum brunneum* Handel-Mazzetti, Acta Horti Gothob. 13: 103. 1939.

褐紫乌头 he zi wu tou

Caudex ellipsoid-globose or subterete, 1.5–3.5 cm. Stem 85–110 cm, simple or 1-branched below inflorescence, glabrous or nearly so, near inflorescence retrorse pubescent. Proximal cauline leaves long petiolate; petiole 20–25 cm, distal ones shorter, base sheathed; leaf blade reniform or pentagonal, 3.8–6 × 6.5–11 cm, both surfaces glabrous, 3-parted; central lobe obovate, obtuse or rhombic; lateral lobes flabellate, unequally 2-fid near middle. Inflorescence 20–50 cm, 15–30-flowered; rachis and pedicels ± densely retrorse pubescent; lowermost bracts 3-fid, others linear. Pedicels 0.5–2.5(–5.8) cm, with 2 bracteoles proximally to distally; bracteoles narrowly linear, 1.6–4 mm. Sepals brown-purple or gray-purple, ca. 1 cm, sparsely pubescent or nearly glabrous. Petaline limb rounded at apex, ecalcarate; lip ca. 2.5 mm. Stamens glabrous; filaments entire. Carpels 3, sparsely pubescent or glabrous. Follicles 1.2–2 cm, glabrous. Seeds obovate, ca. 2.6 mm. Fl. Aug–Sep. $2n = 16^*$.

• Slopes, *Abies* forests; 3000–4300 m. SW Gansu, SE Qinghai, NW Sichuan.

50. *Aconitum pseudobrunneum* W. T. Wang, Acta Bot. Yunnan. 4: 129. 1982.

小花乌头 xiao hua wu tou

Caudex obovoid, ca. 1.2 cm, ca. 5 mm in diam. Stem ca. 50 cm, simple, glabrous. Leaves ca. 10, crowded below or near base, long petiolate; petiole 3.5–13 cm; leaf blade orbicular-reniform or pentagonal, 3.2–3.5 × 5–7 cm, papery, both surfaces glabrous, base cordate, 3-parted; central lobe cuneate-rhombic; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence terminal, ca. 14 cm, 15-flowered; rachis and pedicels densely retrorse pubescent; proximal bracts 3-fid, 7–10 mm, distal ones linear, 2.5–4 mm, glabrous. Pedicels 3–7 mm, with 2 bracteoles at or near base; bracteoles lanceolate-linear, ca. 1.5 mm, glabrous. Sepals purple, abaxially appressed pubescent; lower sepals long elliptic or oblong, 6.5–7.5 × 2.5–4.5 mm; lateral sepals obliquely broadly ovate, 6.5–8.5 × 5–7 mm; upper sepal galeate, 7–11 mm high, long beaked, lower margin ca. 1.1 cm. Petals 0.8–1.2 cm; claw 6.5–8 mm, sparsely pubescent at apex; limb 7–7.5 mm, ecalcarate; lip 4–5 mm, sparsely pubescent at base, apex 2-lobed. Stamens 3.5–5 mm, glabrous; filaments entire. Carpels 3, glabrous. Fl. Aug.

• By streams; 3900–4000 m. W Sichuan (Xiangcheng Xian).

51. *Aconitum bulleyanum* Diels, Notes Roy. Bot. Gard. Edinburgh. 5: 267. 1912.

滇西乌头 dian xi wu tou

Caudex obconical, ca. 3.5 cm. Stem ca. 1.2 m, apically branched, basally sparsely pubescent or becoming glabrous, elsewhere glabrous. Proximal leaves long petiolate; petiole 7–12 cm; leaf blade pentagonal, 9–11 × 13–18 cm, abaxially glabrous, adaxially sparsely pubescent or becoming glabrous, 3-parted; central lobe broadly rhombic; lateral lobes obliquely flabellate, unequally 2-fid slightly beyond middle. Inflorescence terminal, ca. 10-flowered; rachis and pedicels glabrous; proximal bracts leaflike, distal ones lanceolate. Pedicels 3–7 cm, with 2 bracteoles on lowermost pedicels; bracteoles lanceolate, 1.5–1.8 cm, others linear-oblong to linear, 0.6–1.4 cm × 0.6–2.5 mm, glabrous. Sepals purple, abaxially glabrous; lower sepals ca. 1.4 cm; lateral sepals ca. 1.6 cm; upper sepal galeate, 1.6–2 cm high, beak ca. 3 mm, lower margin suberect, oblique upward, 1.7–2.1 cm. Petals glabrous; limb ca. 8 mm; lip ca. 3 mm; spur incurved, ca. 1.8 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Jul–Sep. $2n = 16^*$.

• Forest margins, by streams; 3200–3500 m. W Yunnan.

52. *Aconitum spathulatum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 65. 1965.

匙苞乌头 chi bao wu tou

Caudex narrowly obconical, ca. 6.8 cm, ca. 2.2 cm in diam. Stem ca. 1 m tall, apically branched, glabrous. Proximal cauline leaves withered at anthesis, middle ones long petiolate; petiole 5.2–10 cm, glabrous; leaf blade reniform-pentagonal, ca. 11 × 14 cm, abaxially glabrous, adaxially sparsely appressed pubescent, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 14–18 cm, 8–12-flowered; rachis and pedicels glabrous; proximal bracts leaflike, distal ones elliptic. Pedicels 2–5.2 cm, with 2 bracteoles at middle or above, glabrous; bracteoles broadly ovate, 6–12 × 4–8 mm, 3-lobed, others obovate-elliptic or spatulate. Sepals blue, abaxially glabrous; lower sepals 1.5–1.7 cm; lateral sepals 1.8–2.2 cm; upper sepal galeate, 2–2.7 cm high, shortly beaked, lower margin slightly oblique upward, suberect, 2–2.5 cm. Petals glabrous, subequaling sepal; lip ca. 6 mm, slightly concave; spur incurved, ca. 3 mm. Stamens glabrous; filaments 2-denticulate. Carpels (3–)5, glabrous. Fl. Aug–Sep. $2n = 16^*$.

• Forests; ca. 3700 m. Yunnan (Heqing Xian).

53. *Aconitum geniculatum* H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 201. 1950.

膝瓣乌头 xi ban wu tou

Caudex unknown. Stem ca. 1 m tall, branched, glabrous, or yellowish spreading pubescent. Proximal cauline leaves long petiolate; petiole 3–5 cm, glabrous, base sheathed; leaf blade orbicular-pentagonal, 6–10 × 6–10 cm, adaxially sparsely appressed pubescent at veins, base cordate, 3-parted; central lobe rhombic, 3-fid; lateral lobes obliquely flabellate, 2-parted beyond middle. Inflorescence racemose or corymbose, 3–8.5 cm, 2–8-flowered; rachis and pedicels glabrous; bracts leaflike. Pedicel 2–4 cm, with 2 bracteoles at middle; bracteoles linear, 3.5–4.5 mm, glabrous. Sepals blue, abaxially glabrous; lower sepals oblong; lateral sepals broadly obovate, 1.3–1.4 cm, abaxially sparsely pubescent; upper sepal high galeate, ca. 1.6 cm high, lower margin 1.5–1.8 cm. Petals glabrous; claw geniculate at apex; limb ca. 1.1 cm; lip 4.5–5.5 mm, 2-lobed at apex; spur incurved or circinate, 2.5–4.5 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 5, glabrous. Fl. Jul. $2n = 16^*$.

• Mountains, grassy slopes, wet grassy places, by streams; 3200–3600 m. Sichuan, Yunnan.

1a. Petaline spur ca. 4.5 mm, circinate; lip ca. 5.5 mm 53d. var. *longicalcaratum*

1b. Petaline spur ca. 2.5 mm, incurved; lip ca. 4.5 mm.

2a. Stem yellowish spreading pubescent 53b. var. *unguiculatum*

2b. Stem glabrous.

3a. Upper sepal high galeate 53a. var. *geniculatum*

3b. Upper sepal galeate or lower galeate, oblique, broadest above middle 53c. var. *humilius*

53a. *Aconitum geniculatum* var. *geniculatum*

膝瓣乌头(原变种) xi ban wu tou (yuan bian zhong)

Stem glabrous. Upper sepal high galeate. Petaline spur incurved, ca. 2.5 mm; lip ca. 4.5 mm.

• Mountains; ca. 3200 m. NE Yunnan.

53b. *Aconitum geniculatum* var. *unguiculatum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 73. 1965.

爪盔膝瓣乌头 zhao kui xi ban wu tou

Stem yellowish spreading pubescent. Petaline spur incurved, ca. 2.5 mm; lip ca. 4.5 mm.

• Grassy slopes; 3500–3600 m. Yunnan (Luquan Xian).

53c. *Aconitum geniculatum* var. *humilius* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 73. 1965.

低盔膝瓣乌头 di kui xi ban wu tou

Stem glabrous. Upper sepal galeate or lower galeate, oblique, broadest above middle. Petaline spur incurved, ca. 2.5 mm; lip ca. 4.5 mm.

• Wet grassy places; ca. 3600 m. Sichuan (Puge Xian).

53d. *Aconitum geniculatum* var. *longicalcaratum* M. Li, Acta Phytotax. Sin. 32(2): 192. 1994.

长距膝瓣乌头 chang ju xi ban wu tou

Petaline spur circinate, ca. 4.5 mm; lip ca. 5.5 mm.

• By streams; ca. 3200 m. Sichuan (Yuexi Xian).

54. *Aconitum luningense* W. T. Wang in W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 24. 1987.

芦宁乌头 lu ning wu tou

Caudex carrot-shaped or terete, 6.5–8.5 cm, ca. 1 cm in diam. Stem 60–100 cm tall, simple or branched apically, apically spreading pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole ca. 4.5 cm, sparsely spreading pubescent; leaf blade pentagonal, 5–7 × 7–9 cm, papery, abaxially sparsely pubescent at veins, adaxially appressed pubescent, base cordate, 3-parted; central lobe rhombic or broadly rhombic, subpinnately lobed; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, ca. 5 cm, several flowered; rachis and pedicels glabrous; lowermost bracts leaflike, others linear. Pedicels 2–3.5 cm, proximally with 2 bracteoles; bracteoles linear, glabrous. Sepals blue-purple, abaxially glabrous; lower sepals obovate-oblong or linear, ca. 1.2 cm × 1.5–3.5 mm; lateral sepals obliquely broadly obovate, ca. 1.1 × 1.2 cm; upper sepal galeate, ca. 2 cm high, clawed, ca. 1.5 cm from base to beak. Petals ca. 1.5 cm, glabrous; limb ca. 9 mm; lip ca. 5.5 mm; spur circinate, ca. 3.5 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3, glabrous. Fl. Sep.

• Scrub; 3000–3100 m. Sichuan (Mianning Xian).

55. *Aconitum magnibracteolatum* W. T. Wang, Acta Bot. Yunnan. 6: 364. 1984.

巨苞乌头 ju bao wu tou

Caudex ca. 1.6 cm in diam. Stem ca. 80 cm, base sparsely pubescent, elsewhere glabrous. Distal leaves shortly petiolate; petiole ca. 1.5 cm; leaf blade cordate-pentagonal, ca. 5 × 8 cm, papery, abaxially glabrous, adaxially sparsely appressed pubescent, 3-parted; central lobe narrowly rhombic, 3-fid; lateral lobes unequally 2-parted. Inflorescence terminal, ca. 29 cm, 14-flowered; distal rachis retrorse yellowish pubescent, elsewhere glabrous; bracts leaflike, shortly stipitate. Proximal pedicels 7–10 cm, distal ones shorter, sparsely retrorse pubescent; bracteoles 2, leaflike, 1–3.5 × 1–3.5 cm, contiguous with flower. Sepals white or bluish, abaxially appressed pubescent; lower sepals obliquely elliptic or narrowly lanceolate, 1.1–1.3 cm; lateral sepals obliquely rhombic, ca. 1.6 × 0.7 cm, abaxially sparsely villous; upper sepal galeate, with short ca. 1.2 mm beak, lower margin ca. 1.8 cm. Petals ca. 2.1 cm, pilose; claw geniculate at apex; limb ca. 1 cm; lip ca. 3 mm, 2-lobed; spur curved, ca. 1.5 mm. Stamens glabrous; filaments entire, rarely 1-denticulate. Carpels 3, appressed pubescent.

• Grassy slopes; ca. 4100 m. W Sichuan (Yanbian Xian).

56. *Aconitum yangii* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 25. 1987.

竞生乌头 *jing sheng wu tou*

Caudex carrot-shaped. Stem ca. 80 cm, shortly branched, basally glabrous, apically sparsely retrorse and appressed pubescent, or spreading pubescent. Middle cauline leaves shortly petiolate; petiole 2–3 cm, appressed pubescent; leaf blade orbicular-pentagonal, ca. 6 × 6–8 cm, leathery, abaxially glabrous, adaxially sparsely appressed pubescent, base broadly cordate or truncate-cordate, 3-parted; central lobe rhombic, apex acuminate, 3-fid; lateral lobes obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, ca. 24 cm, ca. 7-flowered; rachis and pedicels retrorse and appressed pubescent; proximal bracts leaflike, distal ones linear. Pedicels 2–6.5 cm, with 2 bracteoles near middle; bracteoles linear, 5–7 mm, sparsely pubescent. Sepals blue, abaxially appressed or spreading pubescent; lower sepals oblong or narrowly oblong, ca. 1.5 × 0.3–0.7 cm; lateral sepals obliquely broadly obovate, ca. 1.6 × 1.9 cm, adaxially sparsely pilose; upper sepal high galeate or galeate, 2–2.2 cm high, not or distinctly clawed, with a 4–5 mm beak, 1.6–2 cm from base to beak, lower margin curved. Petals ca. 2.5 cm, glabrous; claw ca. 2 cm; limb ca. 1.3 cm; lip ca. 6 mm, 2-lobed at apex; spur slightly circinate, ca. 3.5 mm. Stamens glabrous; filaments entire. Carpels 3, densely appressed pubescent. Fl. Aug.

• 3100–3800 m. NW Yunnan (Zhongdian Xian).

1a. Stem sparsely retrorse and appressed pubescent apically; sepals abaxially appressed pubescent, upper sepal high galeate, not clawed 56a. var. *yangii*

1b. Stem spreading pubescent; sepals abaxially spreading pubescent, upper sepal galeate, distinctly clawed 56b. var. *villosulum*

56a. *Aconitum yangii* var. *yangii*

竞生乌头(原变种) *jing sheng wu tou* (yuan bian zhong)
Stem sparsely retrorse and appressed pubescent apically. Sepals abaxially appressed pubescent; upper sepal high galeate, not clawed.

• About 3100 m. NW Yunnan (Zhongdian Xian).

56b. *Aconitum yangii* var. *villosulum* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 26. 1987.

展毛竞生乌头 *zhan mao jing sheng wu tou*

Stem spreading pubescent. Sepals abaxially spreading pubescent; upper sepal galeate, distinctly clawed.

• About 3800 m. NW Yunnan (Zhongdian Xian).

57. *Aconitum georgei* H. F. Comber, Notes Roy. Bot. Gard. Edinburgh 18: 223. 1934.

长喙乌头 *chang hui wu tou*

Caudex carrot-shaped, 8–11 cm, ca. 1.8 cm in diam. Stem 60–150 cm tall, basally glabrous, apically sparsely retrorse and appressed pubescent. Leaves with petiole ca. 3 cm; leaf blade orbicular-pentagonal, ca. 6 × 8 cm, both surfaces glabrous, 3-parted; central lobe subrhombic, subpinnatifid, margin with irregular teeth; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, erect or pendulous, 5–10-flowered, proximally with several short branches, sparsely retrorse pubescent; proximal bracts leaflike, distal ones usually 3-fid. Pedicels and rachis intersected at obtuse angle, 2.5–3.5 cm, with 2 bracteoles near middle of pedicels; bracteoles linear-lanceolate. Sepals blue-purple, abaxially appressed pubescent; lower sepals ca. 1.6 cm; lateral sepals ca. 1.8 cm; upper sepal high galeate, 2–3 cm high, external margin subvertical, concave, with a 5–8 mm beak, sublevel, lower margin slightly oblique upward, ca. 2 cm. Petals ca. 2.2 cm; limb ca. 1 cm; lip 2-lobed; spur very short, glabrous or sparsely pubescent at apex. Stamens glabrous; filaments entire. Carpels 4 or 5, densely pubescent. Fl. Jul–Sep.

• Forest margins, scrub; 3700–4000 m. NW Yunnan (Lijiang Naxi Zu Zizhixian, Zhongdian Xian).

58. *Aconitum pukeense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 66. 1965.

普格乌头 *pu ge wu tou*

Caudex unknown. Stem ca. 1 m tall, several branched below inflorescence, glabrous. Distal leaves shortly petiolate; petiole ca. 3 cm, glabrous; leaf blade pentagonal, ca. 8 × 10 cm, glabrous, base cordate, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 2-fid slightly beyond middle. Inflorescence terminal, ca. 18 cm, 10-flowered; rachis and pedicels glabrous; bracts leaflike. Proximal pedicels to 8 cm, distal ones 2–3.5 cm, with 2 bracteoles above middle; bracteoles of proximal pedicels leaflike, shortly petiolate, 3-parted, 0.7–1.7 × 1.1–1.7 cm; distal ones elliptic, obovate, or oblong, smaller, 5–6 × 1.5–3 mm, glabrous, undivided. Sepals dark purple-red; lower sepals ca. 1.1 cm; lateral sepals ca. 1.3 cm; upper sepal galeate, ca. 2 cm high, ca. 1.2

cm wide, glabrous, shortly beaked, lower margin suberect, oblique upward, ca. 2 cm. Petals ca. 2 cm, glabrous; claw geniculate at apex; limb ca. 1.1 × 3 mm; lip ligulate, ca. 5 mm, apex slightly concave; spur ca. 3.5 mm, circinate. Stamens glabrous; filaments entire or 1- or 2-denticulate. Carpels 5, glabrous. Fl. Aug.

• Forests, forested valleys, by streams; 2800–3600 m. Sichuan, NE Yunnan.

- 1a. Leaves glabrous; pedicels to 8 cm, bracteoles near flower or not; carpels 5 58a. var. *pukeense*
- 1b. Leaves adaxially pubescent; pedicels to 2.5 cm; bracteoles bordering or near flower; carpels 3 58b. var. *brevipes*

58a. *Aconitum pukeense* var. *pukeense*

普格乌头(原变种) pu ge wu tou (yuan bian zhong)

Leaves glabrous. Pedicels to 8 cm. Bracteoles near flower or not. Carpels 5.

• Forested valleys, by streams; 3400–3600 m. SW Sichuan, NE Yunnan.

58b. *Aconitum pukeense* var. *brevipes* W. T. Wang, Bull. Bot. Res., Harbin 3(1): 26. 1983.

短梗普格乌头 duan geng pu ge wu tou

Leaves pubescent adaxially. Pedicels relatively short, to 2.5 cm. Bracteoles bordering or near flower. Carpels 3.

• Forests; ca. 2800 m. Sichuan (Yuexi Xian).

59. *Aconitum shimianense* W. T. Wang, Acta Bot. Yunnan. 6: 366. 1984.

石棉乌头 shi mian wu tou

Caudex obconical or conical, 2–4 cm, slender, 0.8–1.8 cm in diam. Stem ca. 60 cm, 6–9 mm in diam., apically 1-branched or simple, sparsely retrorse pubescent. Middle cauline leaves with petiole 2.2–4 cm, retrorse yellowish pubescent; leaf blade cordate-pentagonal, ca. 9 × 12 cm, herbaceous, abaxially subglabrous, adaxially sparsely appressed pubescent, 3-parted; central lobe rhombic, apex acuminate, 3-fid; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 7–10 cm, ca. 6-flowered; rachis sparsely retrorse pubescent; bracts leaflike, 3–7.5 cm. Pedicels 3–6 cm, glabrous, with 2 bracteoles near or above middle; bracteoles usually linear, 4–6 mm, glabrous, rarely proximal ones leaflike, ca. 1.8 cm. Sepals blue-purple, ca. 1.6 cm, concave, beak indistinct; lower sepals narrowly ovate or narrowly elliptic, 1–1.3 cm; lateral sepals obliquely obovate, ca. 15 × 1.2 cm. Petals ca. 1.5 cm, glabrous; claw ca. 1 cm; lip ca. 4 mm; spur recurved, ca. 2.5 mm. Stamens glabrous; filaments 2-denticulate. Carpels 5, glabrous.

• Scrub; 3500–3800 m. Sichuan (Shimian Xian).

60. *Aconitum pomeense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 67. 1965.

波密乌头 bo mi wu tou

Caudex unknown. Stem branched, spreading yellowish pubescent. Distal leaves shortly petiolate; petiole ca. 1 cm, spreading pubescent; leaf blade ovate-pentagonal, ca. 4 × 4 cm, abaxially glabrous, adaxially sparsely pubescent at veins, base cordate, 3-parted; central lobe rhombic, 3-fid to middle, subpinnatifid; lateral lobes obliquely flabellate, unequally 2-parted slightly beyond middle. Inflorescence terminal, ca. 15 cm, 6-flowered; rachis sparsely spreading yellow pubescent; bracts leaflike. Pedicels 4–6.5 cm, oblique upward, glabrous, with 2 bracteoles at middle; bracteoles leaflike, sessile, 1.2–2 × 1–2 cm. Sepals blue-purple, abaxially glabrous; lower sepals elliptic or obovate, 1.3–1.4 × 6.5–8 mm; lateral sepals obliquely broadly obovate, 1.5–1.7 × 1.5–1.6 cm; upper sepal navicular, shortly beaked. Petals curved, ca. 2.6 cm, glabrous; claw slightly geniculate at apex; limb ca. 1.2 cm × 3.8 mm; lip ca. 4 mm, slightly concave at apex; spur incurved, ca. 2 mm. Stamens glabrous; filaments 2-denticulate distally. Carpels 5, glabrous. Fl. Aug.

• Alpine grasslands; ca. 4000 m. E Xizang (Bomi Xian).

61. *Aconitum yachiangense* W. T. Wang, Fl. Reipubl. Popul. Sin. 27: 605. 1979.

雅江乌头 ya jiang wu tou

Caudex unknown. Stem ca. 1 m tall, apically branched, spreading pubescent. Leaf blade pentagonal, ca. 7 × 10 cm, both surfaces sparsely pubescent, 3-parted; central lobe rhombic, apex acuminate, subpinnatifid; lateral lobes obliquely flabellate, unequally 2-fid. Compound inflorescence coniform, many flowered; rachis and pedicels densely yellowish pubescent, and intermixed shortly glandular pubescent; bracts leaflike. Pedicels 2–3.3 cm, with 2 bracteoles above middle; bracteoles leaflike. Sepals white, becoming purplish when dried, abaxially spreading pubescent; lower sepals ca. 1.2 cm; lateral sepals orbicular-obovate, ca. 1.4 cm; upper sepal galeate, ca. 2 cm high, clawed, ca. 1.5 cm from base to beak, lower margin oblique upward, concave. Petals sparsely pubescent; limb ca. 1 cm; lip and spur ca. 4 mm. Stamens glabrous; filaments entire. Carpels 5, densely yellowish pubescent. Fl. May.

• Mountains; 3100–3400 m. W Sichuan (Yajiang Xian).

62. *Aconitum chayense* W. T. Wang, Acta Bot. Yunnan. 6: 363. 1984.

察隅乌头 cha yu wu tou

Caudex carrot-shaped, ca. 5.5 cm, ca. 9 mm in diam. Stem ca. 90 cm tall, shortly branched, basally sparsely spreading pubescent, apically glabrous. Proximal cauline leaves withered at anthesis, and middle ones long petiolate; petiole ca. 4.5 cm; leaf blade cordate-pentagonal, ca. 6.4 × 9.5 cm, abaxially glabrous, adaxially pilose at veins, base broadly cordate or subtruncate, 3-parted; central lobe rhombic, apex acute, 3-fid; lateral lobes unequally 2-fid nearly to middle. Inflorescence a panicle, terminal, ca. 20 cm, sparsely branched, branch 1- or 2-flowered; rachis glabrous;

bracts leaflike. Pedicels 1.5–3.5 cm, proximally densely pubescent, apically sparsely so, with 2 bracteoles at middle or above; bracteoles leaflike, 0.6–1.2 cm. Sepals brown-purple, abaxially pubescent; lower sepals elliptic, ca. 9 mm; lateral sepals obliquely broadly obovate, ca. 1.1 × 1.4 cm; upper sepal galeate, ca. 1.5 cm high, beak ca. 2 mm, lower margin curved, ca. 1.3 cm. Petals ca. 1.8 cm; claw ca. 1.5 cm, pilose; lip ca. 6 mm, 2-lobed, pilose; spur subglobose, glabrous. Stamens glabrous; filaments entire or 2-denticulate. Carpels 5, spreading yellowish sericeous. Fl. Sep.

• Scrub, grasslands, by streams; ca. 3700 m. E Xizang (Zayü Xian).

63. *Aconitum nielamuense* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 605. 1979.

聂拉木乌头 *nie la mu wu tou*

Caudex narrowly conical or carrot-shaped, 3.5–6.5 cm, ca. 1.2 cm in diam. Stem 60–150 cm, 4–10 mm in diam., several branched or simple, basally glabrous, apically retrorse pubescent. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 6–9 cm; leaf blade broadly pentagonal, ca. 7 × 9.5 cm, both surfaces sparsely shortly appressed pubescent, 3-parted; central lobe rhombic, apex acute, 3-fid; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence 6.5–30 cm, 6–28-flowered; rachis and pedicels densely spreading yellowish pubescent and shortly glandular pubescent; bracts leaflike. Proximal pedicels 2.5–6.5 cm, distal ones ca. 2 cm, with 2 bracteoles proximally or distally; bracteoles leaflike. Sepals grayish blue-purple, abaxially pubescent; lower sepals ca. 1 cm; lateral sepals 1.5–1.7 cm; upper sepal navicular, 1.8–2.4 cm from base to beak, 1–1.2 cm wide at middle. Petals sparsely pubescent; lip ca. 4 mm, slightly concave; spur slightly incurved, ca. 1.5 mm. Stamens glabrous; filaments entire. Carpels 5, densely pubescent. Fl. Aug–Sep.

• Forest margins, scrub; 3400–3900 m. S Xizang (Nyalam Xian).

64. *Aconitum franchetii* Finet & Gagnepain, Bull. Soc. Bot. France 51: 510. 1904.

大渡乌头 *da du wu tou*

Caudex carrot-shaped, ca. 6 mm, ca. 1.2 cm in diam. Stem to 1.2 m, branched, sparsely retrorse and appressed pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 3–4 cm, sparsely retrorse pubescent; leaf blade cordate-pentagonal, ca. 7.5 × 8.5 cm, nearly glabrous or sparsely pubescent, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence terminal, 10–35 cm, 7–20-flowered; rachis and pedicels retrorse or spreading pubescent, or intermixed with short glandular hairs, or glabrous; proximal bracts leaflike, shortly stipitate, distal ones linear, ca. 9 mm. Pedicels 1–10 cm, with 2 bracteoles at middle; bracteoles of proximal pedicels to 1.5 cm, 3-fid; others oblong to linear, 4–10 × 0.5–2 mm, nearly

glabrous, undivided. Sepals blue, abaxially glabrous; lower sepals ca. 20 cm; lateral sepals ca. 2.1 cm; upper sepal galeate, 1.8–2.4 cm high, 1.9–2.3 cm from base to beak, external margin suberect or oblique, lower margin slightly oblique upward, suberect or slightly concave.

Petals glabrous; claw erect or geniculate at apex; limb ca. 5 mm; spur short, beak curved or subcircinate.

Stamens glabrous; filaments entire or 2-denticulate.

Carpels 3 or 5, glabrous. Fl. Jul–Aug.

• Grassy slopes, forests; 3400–4100 m. Sichuan.

- 1a. Rachis and pedicels spreading pubescent and intermixed shortly glandular pubescent 64c. var. *villosulum*
- 1b. Rachis and pedicels retrorse or appressed pubescent, or glabrous.
 - 2a. Rachis and pedicels appressed pubescent, or glabrous .. 64e. var. *glabrescens*
 - 2b. Rachis and pedicels retrorse pubescent.
 - 3a. Upper sepal navicular-galeate or subnavicular, external margin oblique 64b. var. *subnaviculare*
 - 3b. Upper sepal galeate, external margin suberect.
 - 4a. Petaline claw not geniculate at apex 64a. var. *franchetii*
 - 4b. Petaline claw geniculate at apex
 - 5a. Sepals pubescent abaxially, petals sparsely pubescent 64f. var. *lasiocalyx*
 - 5b. Sepals glabrous abaxially, petals glabrous .. 64d. var. *geniculatum*

64a. *Aconitum franchetii* var. *franchetii*

大渡乌头(原变种) *da du wu tou (yuan bian zhong)*

Aconitum longtouense T. L. Ming.

Rachis and pedicels retrorse pubescent. Upper sepal galeate, external margin suberect. Petaline claw not geniculate at apex.

• Grassy slopes, forests; 3400–4000 m. W Sichuan, Yunnan.

Yang Qiner (pers. comm.) believes that *Aconitum longtouense* is a synonym of *A. georgei*.

64b. *Aconitum franchetii* var. *subnaviculare* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 67. 1965.

低盔大渡乌头 *di kui da du wu tou*

Rachis and pedicels retrorse pubescent. Upper sepal navicular-galeate or subnavicular, external margin oblique.

• Grassy slopes; ca. 3400 m. W Sichuan (Lushan Xian).

64c. *Aconitum franchetii* var. *villosulum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 211. 606. 1979.

展毛大渡乌头 zhan mao da du wu tou

Rachis and pedicels spreading pubescent, intermixed shortly glandular pubescent.

• W Sichuan.

64d. *Aconitum franchetii* var. *geniculatum* W. T. Wang & P. K. Hsiao in W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 8: 21. 1980.

膝瓣大渡乌头 xi ban da du wu tou

Rachis and pedicels retrorse pubescent. Upper sepal galeate, external margin suberect. Sepals glabrous abaxially. Petals glabrous; claw geniculate at apex.

• Sichuan (Baoping Xian).

64e. *Aconitum franchetii* var. *glabrescens* W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 8: 21. 1980.

光序大渡乌头 guang xu da du wu tou

Rachis and pedicels appressed pubescent, or glabrous.

• Sichuan (Meigu Xian).

64f. *Aconitum franchetii* var. *lasioalyx* W. T. Wang & P. K. Hsiao in W. T. Wang, Acta Bot. Yunnan. 4: 129. 1982.

毛萼大渡乌头 mao e da du wu tou

Rachis and pedicels retrorse pubescent. Upper sepal galeate, external margin suberect. Sepals pubescent abaxially. Petals sparsely pubescent; claw geniculate at apex.

• About 4100 m. Sichuan (Yanbian Xian).

65. *Aconitum secundiflorum* W. T. Wang, Bull. Bot. Res., Harbin 3(1): 24. 1983.

侧花乌头 ce hua wu tou

Caudex unknown. Stem 32–42 cm, ca. 2 mm in diam., apically shortly branched, glabrous, 5–8-leaved. Proximal cauline leaves long petiolate, withered at anthesis, and distal leaves shortly petiolate; petiole 1.5–5 cm, sparsely pubescent, base shortly and narrowly sheathed; leaf blade pentagonal, 4.8–5.5 × 4.8–6.4 cm, herbaceous, abaxially glabrous or subglabrous, adaxially sparsely pubescent, 3-parted; central lobe rhombic, apex long acuminate, 3-fid; lateral lobes obliquely flabellate, unequally 2-parted slightly beyond middle. Inflorescence terminal, 6.5–10 cm, 3–5-flowered on one side; rachis and pedicels spreading pubescent; bracts leaflike, shortly stipitate. Pedicels 1–4 cm, with 2 bracteoles bordering flower, bracteoles leaflike or narrowly elliptic, 0.9–1.7 cm × 2.5–14 mm, 2- or 3-lobed. Sepals blue, abaxially pubescent; lower sepals obliquely elliptic or long elliptic, ca. 1.1 × 0.4–0.7 mm; lateral sepals obliquely broadly obovate, ca. 1.4 × 1.6 cm; upper sepal galeate, 1.4–1.6 cm high, shortly beaked, ca. 1.5 cm from base to beak. Petals ca. 9 × 3 mm; claw ca. 1.1 cm, sparsely pubescent; spur decurved, ca. 1.2 mm, glabrous; lip ca. 5 mm, 2-lobed,

sparsely pubescent. Stamens sparsely ciliate; filaments entire. Carpels 4, sparsely pubescent. Fl. Aug.

• Slopes; 2800–2900 m. Sichuan (Maowen Qiang Zu Zizhixian).

66. *Aconitum lycoctonifolium* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 27. 1987.

牛扁叶乌头 niu bian ye wu tou

Caudex unknown. Stem 80–100 cm tall, branched at middle, apically sparsely retrorse and appressed pubescent. Cauline middle leaves long petiolate; petiole 7–15 cm, sparsely appressed pubescent; leaf blade pentagonal, 9–15 × 10–21 cm, papery, both surfaces sparsely pubescent, base cordate, 3-parted; central lobe unequally 2-parted beyond middle. Compound inflorescence terminal, ca. 35 cm, many flowered; rachis and pedicels yellowish spreading pubescent; bracts leaflike. Pedicel 1.5–5 cm, with 2 bracteoles near middle; bracteoles oblanceolate or linear, 5–8 × 1–2 mm, sparsely pubescent. Sepals blue, abaxially pubescent; lower sepals narrowly obovate or suboblong, ca. 1.2 × 0.5–0.8 cm; lateral sepals obliquely broadly obovate, ca. 1.4 × 1.2–1.5 cm; upper sepal navicular-galeate, 1.7–2 cm, clawed, shortly beaked, ca. 2.1 cm from base to beak. Petals ca. 2.2 cm; limb ca. 1 cm × 1.6 mm; lip ca. 5 mm, upper part sparsely pubescent; spur slightly incurved, ca. 1 mm; claw ca. 1.7 cm, spreading pubescent. Stamens pubescent; filaments entire, rarely 2-denticulate. Carpels 3, pubescent. Fl. Sep–Oct.

• *Tsuga* forests; 2600–2700 m. Xizang (Médog Xian).

67. *Aconitum forrestii* Stapf, Bull. Misc. Inform. Kew 1910: 19. 1910.

丽江乌头 li jiang wu tou

Caudex carrot-shaped, ca. 5.5 cm, ca. 1.6 cm in diam. Stem 70–100 cm, apically branched, sometimes simple, retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves slightly long petiolate, withered at anthesis; petiole 2–10 mm; distal leaves shortly petiolate or sessile; leaf blade broadly ovate or pentagonal-ovate, 7–12 × 7–10 cm, papery, both surfaces pubescent, base broadly cordate or shallowly cordate, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence terminal, long, 20–40 cm, narrow, many flowered; rachis and pedicels densely yellowish spreading pubescent and intermixed retrorse pubescent; proximal bracts leaflike, distal ones oblong-linear, shortly petiolate, 1.8–2.8 cm. Pedicels 1–2.5 cm, with 2 bracteoles near middle; bracteoles of proximal pedicels oblong or narrowly oblong, ca. 1 cm, distal ones linear, 4–6 mm. Sepals purple-blue, abaxially pubescent; lower sepals 1.4–1.7 cm; lateral sepals 1.5–1.8 cm; upper sepal galeate, shortly beaked, 1.7–2 cm from base to beak. Petals glabrous or pubescent; lip ca. 5 mm, 2-lobed; spur slightly incurved, ca. 1 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous or pubescent. Fl. Sep. $2n = 16^*$.

• Grassy slopes; ca. 3100 m. SW Sichuan, NW Yunnan.

- 1a. Petals and carpels glabrous 67a. var. *forrestii*
1b. Petals and carpels pubescent 67b. var. *albovillosum*

67a. *Aconitum forrestii* var. *forrestii*

丽江乌头(原变种) li jiang wu tou (yuan bian zhong)
Aconitum likiangense Chen & Liu.

Petals and carpels glabrous.

• Grassy slopes; ca. 3100 m. SW Sichuan (Muli Zang Zu Zizhixian), NW Yunnan (Lijiang Naxi Zu Zizhixian).

67b. *Aconitum forrestii* var. *albovillosum* (Chen & Liu) W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 68. 1965.

毛果丽江乌头 mao guo li jiang wu tou

Aconitum carmichaelii Debeaux var. *albovillosum* Chen & Liu, *Bull. Fan Mem. Inst. Biol.* 11: 47. 1941.

Petals and carpels pubescent.

• Grassy slopes; ca. 3100 m. SW Sichuan (Muli Zang Zu Zizhixian).

68. *Aconitum coriaceifolium* W. T. Wang, *Acta Bot. Yunnan.* 6: 367. 1984.

革叶乌头 ge ye wu tou

Caudex carrot-shaped, 6–9 cm, 7–10 mm in diam. Stem ca. 60 cm, subdichasial branched, sparsely spreading pubescent, apically glabrous, ca. 15-leaved. Cauline middle and distal leaves shortly petiolate; petiole 0.6–3 cm; leaf blade cordate-pentagonal, 5–6 × 5–8 cm, leathery, abaxially glabrous, adaxially sparsely pubescent at veins, base deeply cordate, 3-parted, between lobes slightly imbricate; central lobe broadly rhombic, apex obtuse, 3-lobed; lateral lobes unequally 2-fid ± to middle. Inflorescence terminal or axillary, ca. 10 cm, 2–6-flowered, dichasial branched; rachis and pedicels glabrous; bracts leaflike. Pedicels 1.5–3.7 cm, with 2 bracteoles near middle; bracteoles oblong or linear, 3.5–7 mm, those of proximal pedicels 3-fid. Sepals abaxially glabrous; lower sepals oblong or linear, 1.1–1.2 cm; lateral sepals obliquely broadly obovate, ca. 1.5 × 1.4 cm, adaxially sparsely villous; upper sepal galeate, 1.8–2.2 cm high, clawed, beak ca. 3 mm, lower margin 1.8–2 cm. Petals ca. 1.8 cm; claw glabrous; lip ca. 6 mm, 2-lobed, pilose; spur curved, ca. 3 mm, glabrous. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Aug.

• Slopes; ca. 2400 m. Sichuan (Jiulong Xian).

69. *Aconitum stylosum* Stapf, *Bull. Misc. Inform. Kew* 1910: 20. 1910.

显柱乌头 xian zhu wu tou

Caudex carrot-shaped, ca. 6 cm, ca. 1 cm in diam. Stem 70–90 cm, simple, retrorse and appressed pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 4–8 cm, sparsely retrorse pubescent; leaf blade pentagonal, 5.5–8 × 8.5–12 cm, abaxially nearly glabrous, adaxially sparsely appressed pubescent or at veins pubescent, 3-parted; central lobe broadly rhombic; lateral lobes obliquely flabellate, un-

equally 2-fid slightly beyond middle. Inflorescence 17–25 cm, 7–20-flowered; proximal rachis densely retrorse yellowish pubescent, distal ones and pedicels densely spreading pubescent; bracts leaflike, stipitate, upward becoming small. Pedicels 3–12 cm, distally with 2 bracteoles; proximal bracteoles leaflike or 3-fid, 1.5–3.5 cm, distal ones oblong, linear, or narrowly linear, 0.5–1.6 cm. Sepals blue-purple or white, abaxially sparsely pubescent or glabrous; lower sepals ca. 1.8 cm; lateral sepals orbicular-obovate or broadly obovate, 1.7–2.3 cm; upper sepal galeate or navicular-galeate, oblique upward, shortly beaked, 2–2 cm from base to beak. Petaline claw pubescent above middle, not or geniculate at apex; limb ca. 5.5 mm, sparsely pubescent; spur incurved, ca. 2.5 mm, glabrous. Stamens glabrous; filaments entire or 2-denticulate. Carpels 5, densely yellowish pubescent. Fl. Aug–Oct.

• Grassy slopes; 3400–4000 m. SE Xizang, NW Yunnan.

1a. Petaline claw not geniculate at apex 69a. var. *stylosum*

1b. Petaline claw geniculate at apex 69b. var. *geniculatum*

69a. *Aconitum stylosum* var. *stylosum*

显柱乌头(原变种) xian zhu wu tou (yuan bian zhong)

Aconitum euryanthum Handel-Mazzetti; *A. stylosum* f. *albidum* Chen & Liu

Petaline claw not geniculate at apex.

• Grassy slopes; 3400–4000 m. NW Yunnan.

69b. *Aconitum stylosum* var. *geniculatum* H. R. Fletcher & Lauener, *Notes Roy. Bot. Gard. Edinburgh* 20:184. 1950.

膝爪显柱乌头 xi zhao xian zhu wu tou

Petaline claw geniculate at apex.

• SE Xizang (Zayü Xian), NW Yunnan.

70. *Aconitum yunlingense* Q. E. Yang & Z. D. Fang, *Acta Bot. Yunnan.* 12: 387. 1990.

云岭乌头 yun ling wu tou

Caudex obconical, ca. 5 cm, ca. 1.2 cm in diam. Stem ca. 60 cm, simple, sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 3–5.5 cm, glabrous; leaf blade pentagonal, 5.5–6.5 × 5–8 cm, adaxially sparsely pubescent, base cordate, 3-parted; central lobe rhombic, apex acuminate, subpinnately incised-lobed; lateral lobes flabellate, unequally 2-fid. Inflorescence ca. 10 cm, sparsely 6-flowered; rachis and pedicels glabrous; bracts leaflike. Pedicels 2–5 cm, with 2 bracteoles at apex; bracteoles 3–5 × ca. 1 mm, glabrous. Sepals blue; lower sepals obovate; lateral sepals broadly obovate, ca. 2.2 × 2.2 cm, abaxially glabrous, adaxially sparsely pubescent; upper sepal navicular, ca. 1.5 cm, 2.5–3 cm from base to beak, glabrous, lower margin slightly erect. Petals glabrous; claw geniculate at apex; limb ca. 1.2 cm; lip ca. 4 mm, apex slightly concave; spur curved, ca. 2.5

mm. Stamens glabrous; filaments 2-denticulate. Carpels 5, glabrous.

• Alpine grasslands; ca. 4100 m. NW Yunnan (Weixi Lisu Zu Zhixian).

71. *Aconitum stylosoides* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 606. 1979.

拟显柱乌头 ni xian zhu wu tou

Caudex carrot-shaped or fusiform, ca. 7 cm, to 1.5 cm in diam. Stem ca. 1 m tall, retrorse or ± spreading pubescent. Middle cauline leaves shortly petiolate; petiole ca. 3 cm; leaf blade cordate-pentagonal, ca. 9 × 12 cm, herbaceous, abaxially nearly glabrous, adaxially sparsely appressed pubescent, 3-parted; central lobe rhombic, 3-lobed at middle, margin unequally dentate, apex acuminate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, ca. 20 cm, ca. 8-flowered; rachis and pedicels with intermixed spreading and glandular hairs; bracts leaflike. Pedicels 2–5 cm, suberect upward, with 2 bracteoles at middle or above; bracteoles narrowly linear, ca. 6 mm, rarely leaflike. Sepals blue, abaxially pubescent; lower sepals ca. 1.5 cm; lateral sepals ca. 1.7 cm; upper sepal navicular, 2.5–2.7 cm from base to beak. Petals pubescent; limb ca. 9 mm; lip ca. 4.5 mm, 2-lobed at apex; spur decurved, ca. 2 mm. Stamens pubescent; filaments entire. Carpels 3(or 4), pubescent. Fl. Aug.

• At margins of *Picea* forests; ca. 3500 m. W Sichuan (Daocheng Xian).

72. *Aconitum taronense* (Handel-Mazzetti) H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 197. 1950.

独龙乌头 du long wu tou

Aconitum bisma (Buchanan-Hamilton) Rapaics var. *taronense* Handel-Mazzetti, Symb. Sin. 7(2): 284. 1931.

Caudex obconical, ca. 4 cm, ca. 1 cm in diam. Stem 85–110 cm, simple, retrorse or slightly spreading pubescent, basally usually becoming glabrous, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 2–5 cm; leaf blade pentagonal, 5.5–7.5 × ca. 9 cm, both surfaces glabrous, 3-parted; central lobe usually broadly rhombic or rhombic; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence ± narrowly long, 15–37 × 5–10 cm, 8–35-flowered; rachis retrorse or intermixed with spreading yellowish hairs; bracts leaflike. Pedicels 2.5–7 cm, densely spreading yellowish pubescent, with 2 bracteoles proximal to distal; bracteoles usually linear, 2.5–4 mm, sometimes bracteoles of lowermost pedicels larger, 3-fid. Sepals purple, abaxially sparsely pubescent; lower sepals ca. 1.5 cm; lateral sepals ca. 1.6 cm; upper sepal galeate, shortly clawed, ca. 2 cm high, 1.5–1.8 cm from base to beak. Petals glabrous or nearly so; lip ca. 4.5 mm; spur incurved, ca. 2 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 4 or 5, ± densely pubescent. Follicles 1–1.8 cm. Seeds obovate. Fl. Aug–Sep.

• Grassy slopes; 2600–3600 m. NW Yunnan.

73. *Aconitum kungshanense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 68. 1965.

贡山乌头 gong shan wu tou

Caudex obconical, ca. 3 cm, 6–10 mm in diam. Stem 74–80 cm, 1- or 2-branched below inflorescence, appressed pubescent, with 8 leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 3–7 cm; leaf blade pentagonal, ca. 8 × 9 cm, both surfaces shortly yellowish strigose, 3-parted; central lobe rhombic, apex acuminate; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence 5–18 cm, 7–20-flowered; rachis and pedicels densely spreading yellow pubescent; proximal bracts leaflike, distal ones linear. Pedicels 0.8–2.2 cm, with 2 bracteoles at middle; bracteoles subulate, 2–3 mm. Sepals blue-purple; lower sepals ca. 0.8 cm; lateral sepals ca. 0.9 cm; upper sepal navicular or falcate-navicular, oblique upward, shortly beaked, ca. 1.2 cm from base to beak, both surfaces yellow pubescent, lower margin slightly concave. Petals ca. 9 mm, glabrous; limb ca. 7 mm; lip ca. 5 mm; spur incurved, ca. 1.2 mm. Stamens glabrous; filaments entire. Carpels 5, densely yellow pubescent. Fl. Aug.

• Grassy slopes; 3500–4100 m. Yunnan.

74. *Aconitum tatsienense* Finet & Gagnepain, Bull. Soc. Bot. France 51: 510. 1904.

康定乌头 kang ding wu tou

Caudex carrot-shaped, ca. 10 cm. Stem 60–170 cm tall, simple or 1-branched below inflorescence, basally usually glabrous, apically retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones long or shortly petiolate; petiole 2–7 cm; leaf blade pentagonal, 4.2–7 × 6–8 cm, abaxially sparsely pubescent at veins, adaxially appressed pubescent, 3-parted; central lobe rhombic, apex acuminate; lateral lobes obliquely flabellate or obliquely ovate, unequally 2-parted nearly to base. Inflorescence terminal, 8–40 cm, 7–30-flowered; rachis and pedicels densely spreading pubescent; proximal bracts leaflike, distal ones narrowly linear, 7–12 mm. Pedicels 1.5–4 cm, proximally with 2 bracteoles; bracteoles linear or linear-subulate, 2–4 × ca. 0.4 mm. Sepals pale blue or white, adaxially pubescent or glabrous; lateral sepals ca. 1.6 cm; lower sepals ca. 1.5 cm; upper sepal galeate, 1.7–2 cm high, shortly or long beaked, 1.5–1.8 cm from base to beak. Petals pubescent; claw usually slightly geniculate or not at apex; limb 3–5 mm; spur slightly incurved, short. Stamens pubescent; filaments entire. Carpels 3(–5), glabrous or sparsely pubescent. Fl. Jul–Aug.

• Forests, scrub in valleys, grassy slopes; 2700–3700 m. W Sichuan.

1a. Stem simple or 1-branched below inflorescence; petaline claw usually slightly

geniculate at

apex 74a. var. *tatsienense*

1b. Stem many branched; petaline claw usually not geniculate at apex 74b. var. *divaricatum*

74a. *Aconitum tatsienense* var. *tatsienense*

康定乌头(原变种) kang ding wu tou (yuan bian zhong)

Aconitum sikangense Handel-Mazzetti.

Stem simple or 1-branched below inflorescence.

Petaline claw usually slightly geniculate at apex.

• Scrub in valleys, grassy slopes; 2700–3700 m. W Sichuan.

74b. *Aconitum tatsienense* var. *divaricatum* (Finet & Gagnepain) W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 216. 1979.

展枝康定乌头 zhan zhi kang ding wu tou

Aconitum divaricatum Finet & Gagnepain, Bull. Soc.

Bot. France 51: 511. 1904.

Stem many and longer branched. Petaline claw usually not geniculate at apex.

• Forests; 3100–3500 m. W Sichuan (Kangding Xian).

75. *Aconitum elliotii* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 20. 1963.

墨脱乌头 mo tuo wu tou

Caudex carrot-shaped, to 6 cm, ca. 1.4 cm in diam.

Stem 1–1.5 m tall, simple, apically spreading pubescent, many leaved. Leaf blade ovate, ca. 12 × 12 cm,

subglabrous, base cordate, 3-parted; central lobe ovate-rhombic, 3-lobed to middle, margin with irregular teeth; lateral lobes obliquely ovate, unequally 2-parted

slightly beyond middle. Inflorescence conical, to 30 cm, many flowered; rachis and pedicels densely spreading

yellow pubescent or glabrous; proximal bracts leaflike, distal ones ovate or lanceolate. Pedicels 0.5–9 cm, with

2 bracteoles above middle; bracteoles lanceolate-linear or linear, sometimes leaflike. Sepals blue-purple,

adaxially glabrous; lateral sepals 1.4–1.5 cm; upper sepal galeate, 2.3–3 cm high, beak ca. 4 mm, 2.4–3 cm

from base to beak, lower margin suberect. Petals glabrous, or sparsely yellowish pubescent, ca. 2 cm; claw

suberect; lip slightly concave at apex; spur subcircinate, ca. 3 mm. Stamens glabrous; filaments 2-denticulate.

Carpels 3–5, glabrous. Fl. Aug.

• Scrub, grasslands, grassy slopes; 3000–4100 m. E Xizang.

1a. Rachis and pedicels glabrous 75c. var. *glabrescens*

1b. Rachis and pedicels densely spreading pubescent.

2a. Pedicels shorter, proximal ones to 4.5 cm, distal ones 0.5–1.5 cm 75b. var. *doshongense*

2b. Pedicels longer, proximal ones to 6–9 cm, distal ones ca. 4 cm.

3a. Petals glabrous; carpels 5 75a. var. *elliotii*

3b. Petals sparsely yellowish pubescent; carpels 3 or 4 75d. var. *pilopetalum*

75a. *Aconitum elliotii* var. *elliotii*

墨脱乌头(原变种) mo tuo wu tou (yuan bian zhong)

Rachis and pedicels densely spreading pubescent.

Pedicels longer, proximal ones to 6–9 cm, distal ones ca. 4 cm. Petals glabrous. Carpels 5.

• Grasslands; 3000–3400 m. E Xizang.

75b. *Aconitum elliotii* var. *doshongense* (Lauener) W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 219. 1979.

短梗墨脱乌头 duan geng mo tuo wu tou

Aconitum stylosum var. *doshongense* Lauener, Notes

Roy. Bot. Gard. Edinburgh 25: 20. 1963.

Rachis and pedicels densely spreading pubescent.

Pedicels shorter, proximal ones to 4.5 cm, distal ones 0.5–1.5 cm.

• Grassy slopes; 3700–4100 m. E Xizang (Mêdog Xian).

75c. *Aconitum elliotii* var. *glabrescens* W. T. Wang & L. Q. Li, Acta Bot. Yunnan. 8: 259. 1986.

光梗墨脱乌头 guang geng mo tuo wu tou

Rachis and pedicels glabrous.

• Grassy slopes, 3100–3100 m. E Xizang (Bomi Xian).

75d. *Aconitum elliotii* var. *pilopetalum* W. T. Wang & L. Q. Li, Acta Bot. Yunnan. 8: 260. 1986.

毛瓣墨脱乌头 mao ban mo tuo wu tou

Rachis and pedicels densely spreading pubescent.

Pedicels longer, proximal ones to 6–9 cm, distal ones ca. 4 cm. Petals sparsely yellowish pubescent. Carpels 3 or

4.

• Scrub, grassy slopes; 3500–3800 m. E Xizang (Bomi Xian)

76. *Aconitum spicatum* Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10(2): 165. 1905.

亚东乌头 ya dong wu tou

Caudex narrowly obconical, to 6.5 cm, to 2 cm in diam.

Stem 1–1.5 m tall, usually simple, sparsely pubescent.

Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole ca. 3 cm; leaf blade

cordate-pentagonal, ca. 7 × 9.5 cm, both surfaces appressed pubescent, 3-parted; central lobe rhombic, 3-

fid; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence 6–15 cm, many flowered; rachis and ped-

icels densely spreading yellowish pubescent and shortly glandular pubescent; bracts leaflike or lanceolate-linear

to linear. Pedicels 2–8 cm, oblique upward, proximally with 2 bracteoles; bracteoles narrowly linear, ca. 4 mm.

Sepals purple, abaxially densely pubescent; lower sepals ca. 1.6 cm; lateral sepals 1.5–1.7 cm; upper sepal

galeate or lower galeate, 1.5–2 cm high, ca. 1.7 cm from base to beak, lower margin slightly concave.

Petaline claw sparsely pubescent; lip ca. 5 mm, slightly concave; spur slightly incurved, ca. 1.5 mm. Stamens sparsely pubescent; filaments entire. Carpels 5, densely yellowish pubescent. Fl. Sep. $2n = 32$.

Scrub; ca. 4000 m. S Xizang [Bhutan, Nepal, Sikkim].

77. *Aconitum brevilimbium* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 22. 1963.

短唇乌头 *duan chun wu tou*

Caudex terete, ca. 6 cm, ca. 1.5 cm in diam. Stem erect, 0.5–1.5 m, apically and inflorescence densely curved and appressed yellow pubescent. Proximal cauline leaves long petiolate; petiole to 18 cm, pubescent or becoming glabrous, distal leaves shortly petiolate; leaf blade broadly ovate or orbicular, ca. 8×8 –10 cm, abaxially sparsely pubescent at veins, base cordate, 3-parted; central lobe broadly rhombic, 3-fid nearly to middle; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence to 55 cm, many flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike. Pedicels to 15 cm, suberect upward, with 2 bracteoles at or near middle; bracteoles of proximal pedicels leaflike, distal ones lanceolate. Sepals blue-violet or dark red, abaxially pubescent; lower sepals ca. 1.5 cm; lateral sepals ca. 2 cm; upper sepal navicular, ca. 2 cm high, shortly beaked, ca. 2.5 cm from base to beak. Petals pubescent; lip short, slightly concave; spur incurved, short. Stamens pubescent; filaments 2-denticulate. Carpels 3, appressed sericeous. Fl. Jul.

• *Abies* forests, on boulders on slopes; 3300–4300 m. E Xizang (Médog Xian).

78. *Aconitum chiachaense* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 606. 1979.

加查乌头 *jia cha wu tou*

Caudex terete, ca. 4 cm, ca. 7 mm in diam. Stem 40–45 cm, simple or 1-branched, sparsely retrorse or spreading pubescent. Middle cauline leaves long petiolate; petiole ca. 4.5 cm; leaf blade cordate-pentagonal, ca. 3.4×6 cm, glabrous, 3-parted; central lobe rhombic, 3-lobed; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence 5.5–10 cm, 4- or 5-flowered; rachis and pedicels retrorse white pubescent, or spreading glandular pubescent; proximal bracts leaflike. Pedicels suberect upward, 1.5–3.5 cm, with 2 bracteoles at middle or below; bracteoles linear, 3–6 mm. Sepals blue, abaxially sparsely pubescent; lower sepals ca. 1 cm; lateral sepals obliquely broadly obovate, ca. 1.3 cm; upper sepal galeate, ca. 1.5 cm high, ca. 1.4 cm from base to beak, lower margin slightly concave. Petals glabrous; lip ca. 3.5 mm; spur incurved, ca. 2 mm. Stamens glabrous or sparsely pubescent; filaments entire. Carpels 4 or 5, appressed white pubescent or spreading pubescent. Fl. Aug.

• *Juniperus* scrub, slopes; 4400–4800 m. Xizang.

1a. Stem sparsely retrorse pubescent apically; rachis densely retrorse pubescent; filaments

glabrous; carpels appressed white pubescent 78a. var. *chiachaense*

1b. Stem spreading pubescent; rachis spreading glandular pubescent; filaments sparsely pubescent; carpels spreading pubescent 78b. var. *glandulosum*

78a. *Aconitum chiachaense* var. *chiachaense*

加查乌头(原变种) *jia cha wu tou (yuan bian zhong)*

Stem sparsely retrorse pubescent apically. Rachis densely retrorse pubescent. Filaments glabrous. Carpels appressed white pubescent.

• Slopes; 4500–4800 m. Xizang (Gyaca Xian).

78b. *Aconitum chiachaense* var. *glandulosum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 606. 1979.

腺毛加查乌头 *xian mao jia cha wu tou*

Stem spreading pubescent. Rachis spreading glandular pubescent. Filaments sparsely pubescent. Carpels spreading pubescent.

• *Juniperus* scrub; ca. 4400 m. Xizang (Gyaca Xian).

79. *Aconitum namlaense* W. T. Wang, Acta Bot. Yunnan. 15: 348. 1993.

纳木拉乌头 *na mu la wu tou*

Caudex unknown. Stem ca. 55 cm, apically flexuous, simple, sparsely pubescent, ca. 12-leaved. Proximal cauline leaves withered at anthesis, middle leaves long petiolate or nearly so; petiole 3–5 cm, sparsely pubescent; leaf blade pentagonal, ca. 2.7×4.5 cm, abaxially glabrous, adaxially sparsely appressed pubescent or subglabrous, base deeply cordate, 3-parted; central lobe rhombic, apex acute, 3-lobed; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence terminal, ca. 9.5 cm, 6-flowered; rachis and pedicels glabrous; bracts leaflike. Pedicels 1.5–2.8 cm, with 2 bracteoles at middle; bracteoles usually linear, rarely 3-lobed, 3–5 mm, glabrous. Sepals pale red-purple, abaxially glabrous; upper sepal galeate, ca. 1.7 cm high, 1.5–2 cm from base to beak; lower sepals narrowly obovate or lanceolate, ca. 1.5 cm; lateral sepals obliquely obovate, ca. 1.6 cm, adaxially sparsely pilose. Petals ca. 2.1 cm, glabrous; claw ca. 1.3 cm, slightly geniculate at apex; lip ca. 5 mm; spur circinate, ca. 7 mm. Stamens glabrous, ca. 8 mm; filaments 2-denticulate or entire. Carpels 4, glabrous.

• Grasslands; ca. 4500 m. Xizang (near Nanjiabawa Shan).

One of us (Kadota) believes that this species is the same as *Aconitum stapfianum*.

80. *Aconitum souliei* Finet & Gagnepain, Bull. Soc. Bot. France 51: 515. 1904.

茨开乌头 *ci kai wu tou*

Aconitum souliei var. *pumilum* Finet & Gagnepain. Tube obconical, 1–1.4 cm, 4–6 mm in diam. Stem 25–50(–70) cm tall, basally becoming glabrous, apically sparsely retrorse pubescent, or intermixed with few spreading hairs. Basal leaf 1, with proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 5–15 cm; leaf blade pentagonal or pentagonal-reniform, 2.4–5 × 4.5–7 cm, abaxially sparsely pubescent or becoming glabrous, adaxially appressed pubescent, 3-parted; central lobe broadly rhombic or obtusely-rhombic; lateral lobes obliquely flabellate, unequally 2- or 3-fid. Inflorescence terminal, 3–5 cm, 3–5-flowered; rachis and pedicels densely spreading yellowish pubescent or intermixed with retrorse hairs; lowermost bracts leaflike, others linear. Pedicels suberect upward, 5–10 mm, proximally with 2 bracteoles; bracteoles narrowly linear, 2.5–5 mm. Sepals yellow, abaxially yellowish pubescent; lower sepals ca. 0.9 cm; lateral sepals ca. 1.2 cm; upper sepal galeate or navicular-galeate, shortly beaked, 1.6–1.9 cm from base to beak, ca. 7 mm wide. Petaline claw ± densely pubescent; lip ca. 5 mm, sparsely pubescent; spur incurved, globose, ca. 1 mm, glabrous. Stamens glabrous or sparsely pubescent; filaments entire. Carpels 5, densely brown-yellow villous. Fl. Aug.

• Grassy slopes; 3800–3900 m. NW Yunnan.

81. *Aconitum parcifolium* Q. E. Yang & Z. D. Fang, Acta Bot. Yunnan. 12: 388. 1990.

疏叶乌头 shu ye wu tou

Caudex unknown. Stem 30–35 cm, simple, basally glabrous, apically sparsely retrorse pubescent. Basal leaf 1, and proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 3–5 cm, distal leaves shortly petiolate; leaf blade pentagonal, 2.5–3 × 3–4 cm, abaxially glabrous, adaxially pubescent at veins, base cordate, 3-parted; central lobe rhombic or flabellate; lateral lobes obliquely flabellate, unequally 2- or 3-fid. Inflorescence 5–7 cm, 4–6-flowered; rachis and pedicels spreading pubescent; proximal bracts leaflike, distal ones lanceolate. Pedicels 1–1.5 cm, with 2 bracteoles above middle; bracteoles linear-lanceolate, 2–3 mm, both surfaces glabrous. Sepals blue-purple, abaxially pubescent, adaxially glabrous; lower sepals elliptic, ca. 1 × 0.5–0.8 cm; lateral sepals broadly obovate, ca. 1.2 × 1.3 cm; upper sepal navicular, 7–10 mm high, 1.6–2.5 cm from base to beak, lower margin suberect or slightly concave. Petals ca. 3 cm, glabrous; limb ca. 5 mm, glabrous; lip ca. 1.5 mm, erose; spur curved, ca. 1 mm. Stamens sparsely pilose or glabrous; filaments entire. Carpels 5, appressed pubescent. Fl. Aug.

• Alpine meadows; ca. 3900 m. NW Yunnan (Weixi Lisu Zu Zizhixian).

82. *Aconitum phyllostegium* Handel-Mazzetti, Acta Horti Gothob. 13: 110. 1939.

木里乌头 mu li wu tou

Caudex carrot-shaped, to 7 cm, ca. 1 cm in diam. Stem ca. 30 cm tall, simple or shortly 1-branched, with inflorescence spreading yellow puberulent. Lowest

cauline leaves withered at anthesis, long petiolate; petiole 7–15 cm, base sheathed; leaf blade pentagonal, 2–3.5 × 4–5 cm, adaxially pubescent, base cordate, 3-parted; central lobe rhombic, apex acute, 3-lobed; lateral lobes obliquely flabellate, indistinctly 3-lobed. Inflorescence 8–14 cm, 4–7-flowered; rachis and pedicels spreading yellow puberulent, or appressed pubescent; bracts leaflike, proximal ones long stipitate, distal ones becoming short. Proximal pedicels to 5 cm, distal ones ca. 1.5 cm, with 2 bracteoles bordering flowers; bracteoles leaflike, shortly stipitate. Sepals yellowish or greenish, adaxially and marginally hispid; lower sepals narrowly ovate; lateral sepals obliquely broadly ovate, to 1.5 cm; upper sepal navicular, with a beak, lower margin slightly concave, ca. 1.8 cm. Petals glabrous or pubescent; claw geniculate at apex; limb short; lip narrowly spatulate; spur incurved, globose or subpocket-shaped. Stamens glabrous; filaments entire. Carpels 5, glabrous or pubescent.

• Alpine grasslands, mountains; 4000–4600 m. SW Sichuan, ?Yunnan.

1a. Rachis and pedicels spreading yellow puberulent; petals and ovary glabrous 82a. var. *phyllostegium*

1b. Rachis and pedicels appressed pubescent; petals and ovary pubescent 82b. var. *pilosum*

82a. *Aconitum phyllostegium* var. *phyllostegium*

木里乌头(原变种) mu li wu tou (yuan bian zhong)

Aconitum souliei var. *glabrum* H. F. Comber.

Rachis and pedicels spreading yellow puberulent. Petals and ovary glabrous.

• Alpine grasslands; 4000–4300 m. SW Sichuan (Muli Zang Zu Zizhixian).

82b. *Aconitum phyllostegium* var. *pilosum* H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 183. 1950.

伏毛木里乌头 fu mao mu li wu tou

Rachis and pedicels appressed pubescent. Petals and ovary pubescent.

• Mountains, ca. 4600 m. SW Sichuan (Muli Zang Zu Zizhixian).

83. *Aconitum lobulatum* W. T. Wang, Acta Bot. Yunnan. 6: 369. 1984.

浅裂乌头 qian lie wu tou

Caudex carrot-shaped, ca. 7 cm, ca. 9 mm in diam. Stem ca. 1 m tall, apically retrorse and appressed pubescent. Distal leaves long petiolate; petiole ca. 4.5 cm; leaf blade cordate-pentagonal, ca. 5.4 × 7.5 cm, papery, abaxially curved pubescent at veins, adaxially appressed pubescent, 3-parted; central lobe rhombic, 3-lobed to middle or subpinnately lobed; lobes broadly ovate, apex acute; lateral lobes unequally 2-parted. Inflorescence with branches ca. 2-flowered; rachis and

pedicels retrorse and appressed pubescent; bracts leaflike. Pedicels ca. 2.2 cm, with 2 bracteoles at middle; bracteoles linear, ca. 4 mm. Sepals blue or blue-purple, abaxially glabrous; lower sepals oblong or obliquely elliptic, ca. 1.2 cm; lateral sepals obliquely broadly obovate, ca. 1.7 × 1.5 cm, abaxially sparsely appressed pubescent at veins, adaxially sparsely villous; upper sepal galeate or navicular-galeate, ca. 1.2 cm high, beaked, lower margin concave, ca. 1.8 cm. Petals ca. 1.8 cm; claw pilose; limb ca. 9 × 4 mm; lip ca. 4 mm, pilose; spur subglobose, ca. 1.5 mm, glabrous. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3, glabrous. Fl. Aug–Sep.

• Alpine grasslands, W Sichuan (Muli Zang Zu Zizhixian).

84. *Aconitum stramineiflorum* Chang ex W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 70. 1965.

草黄乌头 *cao huang wu tou*

Caudex carrot-shaped, ca. 1.2 cm in diam. Stem ca. 1.5 m tall, branched, basally pubescent, apically glabrous. Proximal cauline leaves withered at anthesis, distal ones shortly petiolate; petiole ca. 2 cm, glabrous; leaf blade pentagonal, ca. 8 × 12 cm, abaxially sparsely appressed pubescent, adaxially glabrous, 3-parted; central lobe rhombic or narrowly rhombic, apex acuminate; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence terminal, ca. 20 cm, ca. 11-flowered; rachis glabrous; bracts usually leaflike, distal ones linear. Pedicels 2–6.5 cm, above middle densely spreading yellowish pubescent, with 2 bracteoles near middle, bracteoles oblong to narrowly linear, 4.5–10 × 0.5–1.5 mm. Sepals stramineous, glabrous or nearly so; lower sepals ca. 1.2 cm; lateral sepals ca. 1.2 cm; upper sepal galeate, 1.4–1.9 cm high, shortly clawed, with a short beak, slightly upward curved, 1.3–1.5 cm from base to beak, lower margin oblique upward, concave. Petals curved, ca. 1.9 cm, glabrous; lip ca. 3 mm, slightly concave; spur subcircinate, subequaling lip. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Aug.

• Slopes; ca. 3600 m. NW Yunnan (Weixi Lisu Zu Zizhixian).

85. *Aconitum alboflavidum* W. T. Wang, *Acta Bot. Yunnan.* 5: 153. 1983.

淡黄乌头 *dan huang wu tou*

Caudex narrowly obconical, ca. 3 cm, ca. 1 cm in diam. Stem ca. 80 cm, basally sparsely pubescent, apically and petioles retrorse pubescent. Distal leaves shortly petiolate; petiole ca. 2 cm; leaf blade pentagonal, ca. 7 × 9 cm, herbaceous or papery, abaxially sparsely pubescent at veins, adaxially sparsely appressed pilose, base broadly cordate, 3-parted; central lobe rhombic, apex long acuminate, pinnatifid, ultimate lobes triangular; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 35–50 cm, 14–22-flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike, distal ones narrowly lanceolate or narrowly linear, 1–2 cm. Pedicels 1.8–10 cm, with 2 bracteoles at middle or above; bracteoles narrowly

linear or subulate, 3–9 mm, pubescent. Sepals yellowish, abaxially appressed pubescent; lower sepals oblong or narrowly oblong, ca. 9 × 2–3.5 mm; lateral sepals obliquely broadly obovate, ca. 1.4 × 1.2 cm; upper sepal galeate, 1.7–1.9 cm, ca. 1.5 cm from base to beak, lower margin ca. 3 mm, concave. Petals ca. 1.9 cm; claw ca. 1.5 cm, sparsely pubescent; limb ca. 7 mm; lip ca. 3.8 mm, sparsely pubescent, 2-lobed at apex; spur circinate, ca. 3.5 mm, glabrous. Stamens glabrous. Carpels 4 or 5, appressed pubescent. Fl. Aug.

• *Abies* forests, grasslands; 3400–3800 m. NW Yunnan (Dêqên Xian).

86. *Aconitum nutantiflorum* Chang ex W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 70. 1965.

垂花乌头 *chui hua wu tou*

Caudex unknown. Stem ca. 1.5 m tall, many branched, basally spreading pubescent, apically retrorse pubescent, with leaves equally arranged along stem. Middle cauline leaves with petiole ca. 4 cm, glabrous; leaf blade pentagonal, 8.5–10 × ca. 12 cm, abaxially glabrous, adaxially sparsely appressed pubescent, 3-parted; central lobe rhombic, apex acuminate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, ca. 20 cm, 7–12-flowered; rachis retrorse pubescent; proximal bracts leaflike, distal ones elliptic or lanceolate to narrowly linear. Pedicels decurved at apex, 2.5–5 cm, spreading pubescent, proximally with 2 bracteoles; bracteoles subulate, 2.5–3.5 × ca. 0.3 mm, glabrous. Sepals blue or blue-white; lower sepals ca. 1.4 cm; lateral sepals ca. 1.7 cm; upper sepal navicular, glabrous, lower margin 1.7–2.1 cm, slightly concave. Petals ca. 2.2 cm, glabrous; claw slightly geniculate at apex; lip 3–3.5 mm, apex slightly concave; spur subcircinate, ca. 2.5 mm. Stamens glabrous; filaments entire. Carpels 3(–5), glabrous. Follicles 1.4–1.7 cm. Seeds ca. 4 mm. Fl. Aug.

• Forests; ca. 3600 m. SE Xizang (Zayü Xian).

87. *Aconitum pendulicarpum* Chang ex W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 69. 1965.

垂果乌头 *chui guo wu tou*

Caudex carrot-shaped, ca. 6 cm, ca. 1 cm in diam. Stem ca. 1.5 m, several shortly branched below inflorescence, sparsely retrorse pubescent, with 16 leaves equally arranged along stem. Proximal cauline leaves long petiolate, withered at anthesis, middle ones slightly long petiolate; petiole 4.5–6 cm, sparsely spreading pubescent, base sheathed; leaf blade orbicular-reniform or pentagonal, 8–10 × 10–14 cm, abaxially sparsely pubescent at veins, adaxially sparsely appressed pubescent, base broadly cordate, 3-parted; central lobe rhombic, apex acuminate; lateral lobes obliquely flabellate. Inflorescence terminal, 22–28 cm, 13–18-flowered; rachis and pedicels densely retrorse and appressed pubescent; proximal and middle bracts leaflike, distal bracts linear or narrowly so, small. Pedicels slightly decurved, 1.5–5 cm, with 2 proximal bracteoles; bracteoles linear-subulate, 3–4.5 × ca. 0.3

mm. Sepals pale blue; lower sepals ca. 1.2 cm; lateral sepals ca. 1.5 cm; upper sepal navicular-galeate, 1.5–1.7 cm high, abaxially nearly glabrous, external margin oblique, beak ca. 4 mm, 1.5–2 cm from base to beak, lower margin slightly concave. Petals ca. 1.7 cm; claw glabrous or sparsely pubescent; lip ca. 3 mm, glabrous; spur incurved and ca. 1.2 mm, or circinate and 3.5–4 mm. Stamens glabrous; filaments entire. Carpels 3 or 4, sparsely or densely pubescent. Fl. Sep. $2n = 16^*$.

• Forests, scrub; 3500–3800 m. SE Xizang, NW Yunnan.

1a. Petaline spur ca. 1.2 mm, not circinate;

carpels sparsely pubescent 87a. var. *pendulicarpum*

1b. Petaline spur 3.5–3 mm, circinate;

carpels densely pubescent 87b. var. *circinatum*

87a. *Aconitum pendulicarpum* var. *pendulicarpum*

垂果乌头(原变种) *chui guo wu tou* (yuan bian zhong)

Petaline spur incurved, not circinate, ca. 1.2 mm.

Carpels sparsely pubescent.

• Forests; ca. 3500 m. SE Xizang (Zayü Xian).

87b. *Aconitum pendulicarpum* var. *circinatum* W. T. Wang, Acta Bot. Yunnan. 5: 155. 1983.

长距垂果乌头 *chang ju chui guo wu tou*

Petaline spur circinate, 3.5–3 mm. Carpels densely pubescent.

• Scrub; 3600–3800 m. NW Yunnan (Dêqên Xian).

88. *Aconitum rockii* H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 185. 1950.

拟康定乌头 *ni kang ding wu tou*

Caudex carrot-shaped, ca. 6 cm, ca. 1 cm in diam. Stem 50–100 cm, simple or branched, densely spreading pubescent, with 15 leaves equally arranged along stem.

Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 4.5–6.5 cm, spreading pubescent, base narrowly sheathed; leaf blade pentagonal, 6.5–7.5 × 8–12 cm, abaxially sparsely pubescent at veins, adaxially appressed pubescent, 3-parted; central lobe rhombic, 3-fid beyond middle; lateral lobes obliquely flabellate, unequally 2-parted.

Inflorescence ca. 25 cm, many flowered; rachis and pedicels densely spreading yellowish pubescent or appressed pubescent; proximal and middle bracts leaf-like; distal ones oblong to linear, small, ca. 1.2 cm. Pedicels 1.4–5.5 cm, or to 10–12 cm, with 2 bracteoles proximally or distally; bracteoles linear or subulate, rarely ovate, 3–6.5(–10) mm. Sepals blue-purple; lower sepals ca. 1.5 cm; lateral sepals abaxially sparsely pubescent; upper sepal galeate or navicular-galeate, lower margin 1.5–1.8 cm, slightly oblique upward, erect or slightly concave, abaxially glabrous. Petals glabrous; limb ca. 9 mm; lip ca. 4.5 mm, 2-lobed at apex; spur circinate, ca. 3.5 mm. Stamens glabrous; filaments 2-denticulate or entire. Carpels 5, glabrous or ovary pubescent. Fl. Aug–Sep.

• *Rhododendron* forests and scrub, scrub margins; 3800–4100 m. NW Yunnan.

1a. Rachis densely spreading yellowish pubescent;

pedicels 1.4–5.5 cm; carpels pubescent 88a. var. *rockii*

1b. Rachis appressed pubescent; proximal

pedicels to 10–12 cm, distal ones ca. 3.5

cm; carpels glabrous 88b. var. *fengii*

88a. *Aconitum rockii* var. *rockii*

拟康定乌头(原变种) *ni kang ding wu tou* (yuan bian zhong)

Aconitum rockii var. *ramosum* W. T. Wang.

Rachis densely spreading yellowish pubescent. Pedicels 1.4–5.5 cm. Carpels pubescent.

• *Rhododendron* scrub, scrub margins; 3900–4100 m. NW Yunnan (Zhongdian Xian).

88b. *Aconitum rockii* var. *fengii* (W. T. Wang) W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 226. 1979.

石膏山乌头 *shi gao shan wu tou*

Aconitum fengii W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 71. 1965.

Rachis appressed pubescent. Proximal pedicels to 10–12 cm, distal ones ca. 3.5 cm. Carpels glabrous.

• In *Rhododendron* forests; ca. 3800 m. NW Yunnan (Zhongdian Xian).

Further study is necessary to determine the placement of *Aconitum fengii* var. *crispulum* Q. E. Yang (Acta Phytotax. Sin. 37: 572. 1999), which may be synonymous with this taxon.

89. *Aconitum dolichorhynchum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 606. 1979.

长柱乌头 *chang zhu wu tou*

Caudex carrot-shaped, ca. 7 cm, ca. 7 mm in diam.

Stem ca. 1 m tall, basally densely retrorse and spreading pubescent, apically glabrous. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 5–9 cm, nearly glabrous; leaf blade cordate-pentagonal, 7–8.2 × 11–12 cm, both surfaces sparsely pubescent at veins, 3-parted; central lobe cuneate-rhombic, 3-lobed; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence ca. 6 cm, ca. 6-flowered; rachis distally and pedicels densely white spreading pubescent; bracts usually leaflike. Pedicels 1–3 cm, oblique upward, with 2 bracteoles at middle; bracteoles subulate, ca. 5 mm. Sepals blue-purple, abaxially glabrous; lower sepals narrowly oblong or linear, ca. 9 mm; lateral sepals obliquely broadly obovate, ca. 1.7 cm; upper sepal navicular-galeate, long clawed (claw ca. 9 mm), beak ca. 5 mm, ca. 2.5 cm from base to beak, lower margin concave. Petals glabrous.

Stamens glabrous; filaments entire. Carpels 4, glabrous, style ca. 4 mm, ca. 3.2 mm. Fl. Aug.

• NW Yunnan (Dêqên Xian).

90. *Aconitum contortum* Finet & Gagnepain, Bull. Soc. Bot. France 51: 506. 1904.

苍山乌头 *cang shan wu tou*

Caudex carrot-shaped, 5–9 cm, 1.1–1.9 cm in diam.

Stem erect or apically twining, 45–85 cm tall, apically branched, retrorse pubescent, or becoming glabrous, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones long

petiolate; petiole sparsely retrorse pubescent; leaf blade pentagonal, 4.5–7.6 × 8–10 cm, both surfaces sparsely pubescent or abaxially nearly glabrous, 3-sect; central segment rhombic; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence 2–5-flowered; rachis retrorse pubescent; bracts leaflike. Pedicels oblique upward, 2.2–4 cm, glabrous, with 2 bracteoles at middle or above; bracteoles oblong, obovate-oblong, or narrowly obovate, 5–6 × 1.6–3 mm. Sepals blue-purple, abaxially glabrous; lower sepals ca. 1.7 cm; lateral sepals ca. 1.8 cm; upper sepal ca. 2.1 cm, shortly beaked, lower margin oblique upward, suberect, ca. 2 cm. Petals glabrous; lip ca. 3.5 mm, slightly concave; spur incurved, globose, ca. 1.5 mm. Stamens glabrous; filaments usually 2-denticulate, rarely entire. Carpels 3–5, glabrous. Follicles 1.4–1.8 cm. Seeds ca. 3 mm. Fl. Sep–Oct. $2n = 16^*$.

• Mountains; ca. 3400 m. NW Yunnan (Dali Xian, Yunlong Xian).

91. *Aconitum lonchodontum* Handel-Mazzetti, Acta Horti Gothob. 13: 122. 1939.

长齿乌头 chang chi wu tou

Caudex ellipsoid-globose, ca. 1.5 cm. Stem ca. 1 m tall, apically shortly branched, glabrous. Proximal and middle cauline leaves long petiolate; petiole ca. 6 cm; leaf blade cordate-pentagonal, ca. 5.8 × 8 cm, abaxially glabrous, adaxially sparsely retrorse pubescent, 3-parted; central lobe rhombic, subpinnately parted, apex acuminate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 5–7-flowered; rachis and pedicels glabrous; proximal bracts leaflike, others linear. Pedicels slightly curved, to 3 cm, with 2 bracteoles at middle or below; bracteoles nearly subulate, ca. 5 mm. Sepals blue-purple, abaxially glabrous; lower sepals ovate or sublanceolate; lateral sepals orbicular-obovate, ca. 1.8 cm; upper sepal high galeate, 2–2.5 cm high, lower margin oblique upward, ca. 2 cm. Petals glabrous; lip ca. 7 mm, 2-lobed at apex; spur backward subcircinate, ca. 4 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Aug.

• Mountains; ca. 2800 m. W Hubei.

92. *Aconitum fanjingshanicum* W. T. Wang, Bull. Bot. Res., Harbin 9(2): 3. 1989.

梵净山乌头 fan jing shan wu tou

Tuber carrot-shaped, 2–3.5 cm, 0.9–1.4 cm in diam. Stem ca. 70 cm, apically branched, middle sparsely spreading pubescent, elsewhere glabrous. Middle cauline leaves long petiolate; petiole ca. 5.5 cm, sparsely spreading pubescent; leaf blade subpentagonal, ca. 5.4 × 8.5 cm, leathery, abaxially glabrous, adaxially pubescent at veins, base cordate, 3-parted; central lobe rhombic, 3-parted, ultimate lobes narrowly ovate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 2- or 3-flowered; rachis glabrous; bracts leaflike. Pedicels 1.7–2.5 cm, sparsely spreading pubescent nearly to apex, rarely glabrous, with 2 bracteoles at middle; bracteoles narrowly elliptic,

oblong, or linear, 5–7.5 mm, adaxially pubescent at veins, margin ciliate. Sepals blue, glabrous; lower sepals narrowly ovate or oblong, 0.7–1.4 cm; lateral sepals obliquely broadly obovate, ca. 1.3–1.6 cm; upper sepal high galeate, 1.5–1.7 cm high, shortly beaked, lower margin slightly concave, 1.6–1.7 cm. Petals glabrous; claw ca. 1.4 cm; limb ca. 7.5 mm; lip ca. 4 mm, 2-lobed at apex; spur incurved, ca. 2 mm. Stamens ca. 6 mm, glabrous; filaments entire. Carpels 5, glabrous.

• About 2200 m. Guizhou (Fanjing Shan).

93. *Aconitum taibeicum* Handel-Mazzetti, Acta Horti Gothob. 13: 120. 1939.

太白乌头 tai bai wu tou

Caudex obovate-globose or carrot-shaped, 1.5–3 cm. Stem 35–60 cm tall, apically branched, apically retrorse and appressed pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole ca. 22 cm, retrorse pubescent; leaf blade 3.5–5.5 × 5–7 cm, both surfaces sparsely pubescent, 3-parted; central lobe broadly rhombic, subpinnately lobed; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 2–4-flowered; rachis and pedicels retrorse pubescent; bracts 3-fid or oblong. Pedicel suberect upward, decurved at apex, 1.5–2.5 cm, with 2 bracteoles at middle; bracteoles linear, 0.6–1.1 × ca. 0.5 mm. Sepals blue; lower sepals ca. 1.1 cm; lateral sepals ca. 1.2 cm; upper sepal galeate, ca. 1.7 cm high, adaxially glabrous, indistinctly clawed, shortly beaked, ca. 1.5 cm from base to beak, lower margin slightly concave. Petals glabrous; limb ca. 8 mm; lip ca. 3.5 mm; spur incurved, ca. 1 mm. Stamens glabrous; filaments 2-denticulate. Carpels 5, glabrous or sparsely pubescent. Follicles ca. 8 mm. Fl. Sep.

• Alpine grasslands; 2600–3400 m. W Henan, S Shaanxi.

94. *Aconitum transsectum* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 268. 1912.

直缘乌头 zhi yuan wu tou

Caudex carrot-shaped, 6–8 cm, ca. 1.5 cm in diam. Stem to 1 m tall, branched, retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 2–10 cm; leaf blade pentagonal, (4.5–)5(–10) × 6.5–15 cm, abaxially pubescent at veins, adaxially sparsely appressed pubescent, 3-sect or -parted; central segment rhombic, subpinnately lobed; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, 30–45 cm, many flowered; rachis and pedicels densely retrorse and appressed pubescent; proximal bracts leaflike, distal ones smaller, 3-fid or oblong. Pedicel 1–10 cm, with 2 bracteoles at middle or above; proximal bracteoles 3-fid, shortly stipitate, oblong to linear, 4–10 mm, distal ones unlobed. Sepals pale blue, abaxially pubescent; lower sepals ca. 1.3 cm; lateral sepals ca. 1.7 cm; upper sepal galeate, ca. 1.5 cm high, lower margin 2–2.2 cm, apex

curved. Petaline claw pubescent, apex slightly geniculate; lip ca. 4.5 mm, 2-lobed at apex; spur incurved, ca. 1.6 mm. Stamens glabrous; filaments 2-denticulate. Carpels 5, densely appressed pubescent. Follicles ca. 1 cm. Seeds 2.5–3 mm. $2n = 16^*$.

• *Abies* forests, scrub, grassy slopes; 2800–3900 m. W Sichuan (Yanyuan Xian), NW Yunnan (Lijiang Naxi Zu Zizhixian).

95. *Aconitum lihsienense* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 607. 1979.

理县乌头 li xian wu tou

Caudex narrowly obconical or carrot-shaped, 4–7 cm. Stem 50–100 cm tall, simple or apically branched, glabrous, with many leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 8–12 cm; leaf blade orbicular-pentagonal, 4–6.8 × 5.5–8 cm, both surfaces sparsely pubescent at veins, base deeply cordate, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 3-parted. Inflorescence terminal, 6–24 cm, 6–20-flowered; rachis glabrous; proximal bracts leaflike, others oblong-linear. Pedicels 2–6.4 cm, sparsely spreading pubescent, with 2 bracteoles at middle or above; bracteoles oblong-linear to linear, 0.8–1.5 cm × 0.5–3 mm. Sepals dark blue, abaxially glabrous or subglabrous, margin sparsely pubescent; lateral sepals obliquely obovate, ca. 0.9 cm; upper sepal navicular-galeate, 1.4–1.5 cm, shortly beaked, 1.4–1.5 cm from base to beak, lower margin concave. Petals glabrous; claw sometimes slightly geniculate at apex; limb 5–7 mm; lip ca. 2.5 mm; spur subglobose, 1–1.5 mm. Stamens 6–7 mm, glabrous; filaments entire. Carpels 5(or 6), spreading pubescent. Fl. Jul.

• Forests; ca. 3300 m. NC Sichuan (Li Xian).

96. *Aconitum longipedicellatum* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 21. 1963.

长梗乌头 chang geng wu tou

Caudex unknown. Stem to 80 cm tall, basally becoming glabrous, apically retrorse pubescent. Proximal cauline leaves long petiolate; petiole to 25 cm, distal leaves shortly petiolate; leaf blade cordate-pentagonal, ca. 10 × 10 cm, glabrous, 3-parted; central lobe rhombic, apex acute, 3-fid slightly beyond middle. Inflorescence conical, to 40 cm, many flowered; rachis and pedicels pubescent; proximal bracts leaflike. Pedicels erect upward, 3–9 cm, with 2 bracteoles at or near middle; proximal bracteoles leaflike, distal ones lanceolate or linear. Sepals blue-violet, abaxially pubescent; lower sepals ca. 1.4 cm; lateral sepals ca. 1.5 × 1.5 cm; upper sepal subgaleate, ca. 1.7 cm high, shortly beaked, 1.3–2 cm from base to beak, lower margin suberect. Petaline claw pubescent; spur incurved, globose, short. Stamens pubescent; filaments entire or 2-denticulate. Carpels 5, sericeous. Fl. Aug.

• Scrub; ca. 4300 m. SE Xizang.

97. *Aconitum laevicaule* W. T. Wang, Acta Bot. Yunnan. 15: 155. 1983.

光茎乌头 guang jing wu tou

Caudex unknown. Stem ca. 80 cm, glabrous. Middle cauline leaves slightly long petiolate; petiole ca. 4 cm, glabrous; leaf blade pentagonal, ca. 11 × 14 cm, herbaceous, abaxially glabrous, adaxially sparsely appressed pubescent, base deeply cordate, 3-sect; central segment rhombic, apex long acuminate, subpinnatifid; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal, ca. 28 cm, ca. 15-flowered; rachis glabrous; proximal bracts leaflike, 3–8.5 cm, shortly stipitate, distal ones oblong, ca. 1 cm, dentate. Pedicels 0.6–2.5 cm, distally pale brown spreading pubescent, with 2 bracteoles at middle or above; bracteoles linear, 3.5–8 mm, membranous, glabrous. Sepals purple, abaxially sparsely pubescent, elsewhere glabrous; lower sepals narrowly oblong, 5–7 mm; lateral sepals suborbicular, ca. 7 mm; upper sepal galeate, ca. 7 mm high, ca. 8 mm from base to beak, lower margin concave. Petals glabrous; claw ca. 9 mm; limb ca. 7 mm; lip ca. 2.5 mm; spur circinate, ca. 2 mm. Stamens glabrous; filaments 2-denticulate. Carpels 3, glabrous. Fl. Aug–Sep.

• Forests; 3700–3900 m. NW Yunnan (Zhongdian Xian).

98. *Aconitum chuosjiaense* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 607. 1979.

绰斯甲乌头 chuo si jia wu tou

Caudex unknown. Stem dark purple, ca. 1 m tall, slightly retrorse and appressed pubescent. Middle cauline leaves shortly petiolate; petiole ca. 2.4 cm; leaf blade pentagonal, ca. 6.5 × 9 cm, both surfaces sparsely appressed pubescent, base cordate, 3-sect; central segment narrowly rhombic, apex long acuminate, 3-fid at middle; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence ca. 12 cm, 9-flowered; proximal bracts leaflike, distal ones linear; rachis and pedicels densely retrorse pubescent. Pedicels to 3.5 cm, with 2 bracteoles below middle; bracteoles narrowly linear, 4–5 × ca. 0.4 mm. Sepals purplish, external margin sparsely retrorse pubescent at lower part, elsewhere subglabrous; lower sepals linear or narrowly linear, ca. 1 cm × 1–2 mm; lateral sepals obliquely broadly obovate, ca. 1.4 cm; upper sepal galeate, ca. 1.7 cm high, ca. 1.4 cm from base to beak. Petals sparsely pubescent; limb ca. 9 mm; lip ca. 4.5 mm, 2-fid at apex; spur incurved, subglobose, ca. 1.1 mm. Stamens glabrous; filaments entire. Carpels 4, glabrous. Fl. Aug.

• *Picea* forests; ca. 3400 m. NW Sichuan.

99. *Aconitum zhaojueense* W. T. Wang & P. K. Hsiao in W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 8: 16. 1980.

昭觉乌头 zhao jue wu tou

Caudex ellipsoid-globose or oblong, ca. 3.5 cm, 1–2 cm in diam. Stem ca. 80 cm, densely retrorse pubescent. Middle cauline leaves shortly petiolate; petiole ca. 1 cm; leaf blade pentagonal, ca. 7 × 7.8 cm, papery, both surfaces sparsely appressed pubescent, base cordate, 3-sect; central segment rhombic, subpinnately parted;

lateral segments obliquely flabellate, unequally 2-parted. Inflorescence a panicle, terminal, ca. 25 cm, proximally ca. 4-branched, many flowered; rachis and pedicels densely retrorse and spreading pubescent; proximal bracts leaflike, distal ones linear. Pedicels 0.3–2.5 cm, with 2 bracteoles at or above base; bracteoles linear, 3–4.5 mm, densely pubescent. Sepals purple, abaxially pubescent; lower sepals obliquely oblong, 1.1–1.3 cm; lateral sepals obliquely broadly obovate, ca. 1.5 cm, adaxially sparsely villous; upper sepal galeate, ca. 1.9 cm high, shortly clawed, ca. 1.6 cm from base to beak, lower margin slightly concave. Petals ca. 1.7 cm; claw ca. 1.3 cm, rarely pubescent; lip ca. 4.5 mm, 2-lobed at apex; spur subglobose, ca. 1.1 mm in diam. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3, glabrous.

• About 2200 m. Sichuan (Zhaojue Xian).

100. *Aconitum pseudodivarticatum* W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 72. 1965.

全裂乌头 *quan lie wu tou*

Caudex carrot-shaped, 6–10 cm, 0.9–2 cm in diam. Stem 1–1.5 m tall, several branched below inflorescence, basally retrorse pubescent, apically spreading pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle leaves long petiolate; petiole ca. 4.5 cm; leaf blade pentagonal, ca. 8 × 14 cm, both surfaces sparsely pubescent, or becoming glabrous, base cordate, 3-sect; central segment rhombic or broadly rhombic; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, to 25 cm, many flowered; rachis and pedicels densely spreading yellowish or white pubescent; proximal bracts 3-fid, others lanceolate or linear. Pedicels 1.2–3.2 cm, with 2 bracteoles at middle; bracteoles oblong to linear, 3–7 × 0.5–1.6 mm. Sepals purple, abaxially glabrous; lower sepals oblong; lateral sepals ca. 1.3 cm; upper sepal galeate, ca. 1.6 cm high, short, not clawed, shortly beaked, ca. 1.2 cm from base to beak, lower margin slightly concave. Petals sparsely pubescent; limb ca. 6.5 mm; lip ca. 3 mm; spur incurved, ca. 1 mm. Stamens glabrous; filaments entire. Carpels 5, sparsely pubescent. Follicles erect, ca. 9 mm. Seeds ca. 2 mm. Fl. Aug.

• Mountains; ca. 3200 m. E Xizang (Bomi Xian).

101. *Aconitum yanyuanense* W. T. Wang & L. Q. Li, *Acta Phytotax. Sin.* 25: 28. 1987.

盐源乌头 *yan yuan wu tou*

Caudex obovate or carrot-shaped, 6–10 cm, 1.2–2 cm in diam. Stem 1–1.6 m tall, apically branched, basally sparsely spreading pubescent. Basal leaves withered at anthesis; proximal and middle cauline leaves long petiolate; petiole 5–15 cm; leaf blade pentagonal, 8–12 × 10–16 cm, papery, abaxially appressed pubescent at veins, adaxially appressed pubescent, base cordate, 3-sect; central segment broadly rhombic, pinnately parted;

lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal or axillary, 5–15-flowered; rachis and pedicels densely retrorse white or yellowish pubescent; bracts leaflike. Pedicels 1–5 cm, distally with 2 bracteoles; bracteoles usually leaflike.

Sepals purplish, abaxially pubescent; lower sepals oblong, ca. 8 × 3 mm; lateral sepals obliquely broadly obovate, ca. 1 × 1.2 cm; upper sepal galeate, ca. 1 cm high, shortly beaked, ca. 1.4 cm from base to beak, lower margin suberect. Petals glabrous, ca. 1.4 cm; claw geniculate at apex; limb ca. 8 × 2.5 mm; lip ca. 4 mm, 2-lobed at apex; spur incurved, ca. 3 mm. Stamens glabrous; filaments entire. Carpels 4, glabrous.

• *Abies* forests; 3600–3900 m. Sichuan (Yanyuan Xian).

102. *Aconitum japonicum* Thunberg subsp. **napiforme** (H. Léveillé & Vaniot) Kadota, *Rev. Aconitum* E. Asia 179. 1987.

萝卜乌头 *luo bo wu tou*

Aconitum napiforme H. Léveillé & Vaniot, *Reper. Spec. Nov. Regni Veg.* 5: 9. 1908.

Caudex obovoidal, 3–8 cm, 1–3 cm in diam. Stem 15–150 cm, 3–10-branched, sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones with petiole 2–8 cm, sparsely retrorse pubescent; leaf blade pentagonal, 4–14 × 4.5–16 cm, membranous to leathery, both surfaces sparsely retrorse pubescent, base cordate, ternate; central segment rhombic to ovate-rhombic, subpinnately divided or lobed; lateral segments obliquely flabellate, unequally 2-parted, apex acuminate. Inflorescence terminal, racemose to corymbose, 2–8-flowered; rachis and pedicels retrorse pubescent; proximal bracts 3-fid, others oblong or linear. Proximal pedicels 3–10 cm, with 2 bracteoles medially at pedicels; bracteoles linear to lanceolate, 3–10 × 0.5–3 mm. Sepals purple-blue, abaxially sparsely retrorse pubescent; lower sepals oblong, 1–1.9 cm; lateral sepals 1.3–2.3 cm; upper sepal galeate, 2–2.8 cm high, long beaked, lower margin 1.4–2.3 cm. Petals glabrous; limb 3–6 mm wide; lip 2–4 mm; spur incurved to subcircinate, 2–4 mm. Stamens glabrous; filaments 2-denticulate. Carpels 3–5, glabrous or sparsely to densely retrorse pubescent. Follicles erect, 0.8–1.3 cm. Seeds ca. 2 mm. Fl. Aug–Oct. $2n = 32$.

Forests, forest margins, by streams; 500–1500 m. Liaoning [Japan, Korea].

103. *Aconitum longiramosum* W. T. Wang, *Fl. Reipubl. Popularis Sin.* 27: 607. 1979.

长枝乌头 *chang zhi wu tou*

Tuber carrot-shaped, ca. 5 cm, ca. 8 mm in diam. Stem trailing, ca. 1.8 m, with slender branches to 34 cm, basally glabrous, apically pubescent. Cauline leaves with petiole ca. 2.5 cm; leaf blade ovate-pentagonal, to 9 × 9 cm, abaxially glabrous, adaxially sparsely appressed pubescent, 3-parted; central lobe ovate-rhombic, apex caudate-acuminate, subpinnately parted, lobules narrowly ovate; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence terminal, ca.

30 cm, many flowered; rachis and pedicels sparsely spreading pubescent and glandular pubescent; proximal bracts leaflike, distal ones linear. Pedicels 3–5 cm, with 2 bracteoles at middle; bracteoles narrowly linear or subulate, 3–8 mm. Sepals blue-purple, abaxially glabrous; lower sepals ca. 9 mm; lateral sepals 1.2–1.4 cm; upper sepal falcate-navicular, 1.4–1.8 cm from base to beak. Petaline claw sparsely pubescent; lip ca. 3.5 mm; spur ca. 1.2 mm. Stamens glabrous; filaments entire. Carpels 4 or 5(or 6), glabrous. Fl. Aug–Sep.

•Mountains; ca. 3700 m. W Sichuan.

104. *Aconitum racemulosum* Franchet, J. Bot. (Morot) 8: 276. 1894.

岩乌头 *yan wu tou*

Caudex obconical, 2.3–3.6 cm, 0.9–1.1 cm in diam., or subterete, ca. 7 cm, ca. 5 mm in diam. Stem 40–65 cm tall, glabrous, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones shortly petiolate; petiole terete, 2.2–3 cm, glabrous; leaf blade pentagonal, sometimes orbicular-rhombic, 5.5–9 × 8–10 cm, leathery, glabrous, base cordate or shallowly cordate, 3-parted; central lobe ovate-rhombic, apex long acuminate; lateral lobes obliquely flabellate; distal leaves smaller, broadly ovate or rhombic, 3-fid slightly beyond middle, sometimes narrowly ovate, almost unlobed. Inflorescence 2.2–3 cm, 1–6-flowered; rachis and pedicels glabrous; bracts ovate or narrowly ovate. Pedicels slightly decurved, ca. 1 cm, with 2 bracteoles at middle; bracteoles lanceolate-linear to broadly ovate or rhombic, 3–12 × 1.5–9.5 mm, nearly glabrous. Sepals blue, glabrous; lower sepals ca. 2.1 cm; lateral sepals ca. 2.2 cm; upper sepal cylindrical-galeate, 2.4–3.2 cm high, lower margin slightly concave, 1.5–2.4 cm. Petals glabrous; claw long; lip ca. 6 mm; spur incurved, 5–7 mm. Stamens glabrous; filaments 2-denticulate or entire. Carpels 3, glabrous. Follicles 1.6–1.8 cm. Seeds ca. 2 mm. Fl.

Sep–Oct. $2n = 16^*$.

•On rocks in valleys and forests; 1600–2800 m. Guizhou, W Hubei, Sichuan, NE Yunnan.

1a. Bracteoles relatively small, lanceolate to lanceolate-linear, 3–8 × ca. 1.5 mm, apex acuminate 104a. var. *racemulosum*

1b. Bracteoles relatively large, ovate, broadly ovate, or rhombic, 7–12 × 5–9.5 mm, apex acute 104b. var. *grandibracteolatum*

104a. *Aconitum racemulosum* var. *racemulosum*

岩乌头(原变种) *yan wu tou* (*yuan bian zhong*)

Aconitum coriaceum H. Léveillé; *A. racemulosum* var. *pengzhouense* W. J. Zhang & G. H. Chen; *A. sczukinii* Turczaninow var. *pauciflorum* Rapaics.

Bracteoles relatively small, lanceolate to lanceolate-linear, 3–8 × ca. 1.5 mm, apex acuminate.

•1600–2300 m. Guizhou, W Hubei, Sichuan, NE Yunnan.

104b. *Aconitum racemulosum* var. *grandibracteolatum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 75. 1965.

巨苞岩乌头 *ju bao yan wu tou*

Bracteoles relatively large, ovate, broadly ovate, or rhombic, 7–12 × 5–9.5 mm, apex acute.

•2300–2800 m. W Sichuan.

105. *Aconitum rhombifolium* F. H. Chen, Bull. Fan Mem. Inst. Biol, n. s., 1: 91. 1943.

菱叶乌头 *ling ye wu tou*

Caudex unknown. Stem to 70 cm tall, ca. 4 mm in diam., glabrous, with leaves equally arranged along stem. Leaves shortly petiolate; petiole 1.4–3 cm, glabrous; leaf blade rhombic-ovate or narrowly ovate, 8.5–15.5 × 3.3–7 cm, leathery, glabrous, abaxially veins convex or not, margin undivided, base broadly cuneate or rounded. Inflorescence 2–3.5 cm, 1–3-flowered; rachis and pedicels sparsely spreading pubescent or pedicels glabrous; bracts oblong or subulate, 4–11 mm, glabrous. Pedicels 1.3–1.6 cm, with 2 bracteoles at middle or below; bracteoles subulate, 2–2.5 mm, sparsely pubescent or glabrous. Sepals blue, abaxially sparsely pubescent; lower sepals 1.4–1.5 cm; lateral sepals 1.5–1.6 cm; upper sepal cylindrical-galeate, ca. 2.5 cm high, lower margin concave, 1.1–1.5 cm. Petals glabrous; lip ca. 5 mm; spur incurved, 2–3 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3, glabrous, or ovary sparsely pubescent. Follicles 1.7–1.8 cm. Seeds ca. 2.6 mm. Fl. Oct–Nov.

•On rocks, steep cliffs; 900–1200 m. Sichuan.

1a. Leaf blade rhombic-ovate, broadly cuneate at base, abaxially veins convex, pedicels, bracteoles, and carpels pubescent 105a. var. *rhombifolium*

1b. Leaf blade narrowly ovate, rounded at base, abaxially veins not convex, pedicels, bracteoles, and carpels glabrous 105b. var. *leiocarpum*

105a. *Aconitum rhombifolium* var. *rhombifolium*

菱叶乌头(原变种) *ling ye wu tou* (*yuan bian zhong*)

Leaf blade rhombic-ovate, abaxially veins convex, base broadly cuneate. Pedicels, bracteoles and carpels pubescent.

•Steep cliffs; ca. 1200 m. Sichuan.

105b. *Aconitum rhombifolium* var. *leiocarpum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 76. 1965.

光果菱叶乌头 *guang guo ling ye wu tou*

Leaf blade narrowly ovate, abaxially veins not convex, base rounded. Pedicels, bracteoles and carpels glabrous.

•On rocks; 900–1000 m. W Sichuan (Tianquan Xian).

106. *Aconitum hemsleyanum* E. Pritzl in Diels, Bot. Jahrb. Syst. 29: 329. 1900.

瓜叶乌头 *gua ye wu tou*

Caudex conical, ellipsoid-globose, or fusiform, 1.6–10 cm, to 1.6–2.8 cm in diam. Stem usually purplish, twining, branched, glabrous. Leaves long petiolate; petiole 4–10 cm, sparsely pubescent or nearly glabrous; leaf blade pentagonal or ovate-pentagonal, 6.5–12 × 8–13 cm, glabrous, base cordate or subtruncate, 3-parted; central lobe trapezoid-rhombic or ovate-rhombic; lateral lobes obliquely flabellate, unequally 2-lobed. Inflorescence terminal, 2–6(–12)-flowered; rachis and pedicels glabrous or appressed pubescent, or pedicels spreading pubescent; proximal bracts leaflike or broadly elliptic; distal bracts linear, smaller. Pedicels usually pendulous, 2.2–6 cm, with 2 bracteoles proximally or distally; bracteoles linear, 3–5 × ca. 0.5 mm, glabrous or pubescent. Sepals dark blue, abaxially glabrous or sparsely pubescent, or both surfaces pubescent; lower sepals 1.2–1.3 cm; lateral sepals suborbicular, 1.5–1.6 cm; upper sepal high galeate or cylindrical-galeate, 2–2.4 cm high, clawed or indistinctly so, lower margin erect or slightly concave, 1.7–1.8 cm. Petals glabrous, or petaline lip and claw sparsely pubescent; limb ca. 1 cm × 4 mm; lip ca. 5 mm; spur incurved or circinate, 2–8 mm. Stamens glabrous; filaments 2-denticulate or entire. Carpels 5, glabrous or rarely ovary pubescent. Follicles erect, 1.2–1.5 mm; persistent style 2.5–5.5 mm. Seeds ca. 3 mm. Fl. Aug–Oct.

Forests, forest margins, scrub, mountains, grassy slopes; 1700–3500 m. W Anhui, NW Guizhou, W Henan, Hubei, N Hunan, N Jiangxi, S Shaanxi, Sichuan, Xizang, NW and W Yunnan, NW Zhejiang [Myanmar].

- 1a. Leaves subtruncate at base, persistent style 5–5.5 mm 106d. var. *chingtungense*
- 1b. Leaves cordate at base, persistent style ca. 2.5 mm.
 - 2a. Distal leaves abaxially with a globose bulbil; petaline spur ca. 1 mm 106g. var. *hsiae*
 - 2b. Distal leaves without bulbil; petaline spur more than 1.5 mm.
 - 3a. Bracteoles pubescent, or glabrous, sepals pubescent on both surfaces or abaxially pubescent.
 - 4a. Bracteoles and sepals pubescent on both surfaces; petals glabrous; abaxial hairs on upper sepal indistinct 106h. var. *lasianthum*
 - 4b. Bracteoles glabrous; sepals pubescent only abaxially.
 - 5a. Petaline lip and spur sparsely pubescent, abaxial hairs on upper sepal ca. 8 mm, rachis glabrous or appressed pubescent 106i. var. *pilopetalum*
 - 5b. Petaline lip and spur glabrous; abaxial hairs on upper sepal indistinct; rachis spreading pubescent ... 106k. var. *xizangense*

- 3b. Bracteoles and sepals abaxially glabrous.
 - 6a. Petaline spur 4–8 mm, circinate.
 - 7a. Petaline spur 4–6 mm . 106b. var. *circinatum*
 - 7b. Petaline spur ca. 8 mm 106c. var. *elongatum*
 - 6b. Petaline spur 1.5–2 mm, incurved or circinate.
 - 8a. Pedicels glabrous or appressed pubescent.
 - 9a. Branchlet glabrous; spur ca. 2 mm, not circinate 106a. var. *hemsleyanum*
 - 9b. Branchlet sparsely pubescent; spur 6–7 mm, circinate 106j. var. *puberulum*
 - 8b. Pedicels spreading pubescent.
 - 10a. Petals pubescent, upper sepal not clawed; cylindrical-galeate, spur ca. 1.5 mm; caudex 1.6–3 cm, ca. 1.6 in diam. 106e. var. *atropurpureum*
 - 10b. Petals glabrous, high galeate, upper sepal clawed, claw ca. 5 mm; spur ca. 6 mm; caudex 5.5–10 cm, 2.5–2.8 in diam. 106f. var. *unguiculatum*

106a. *Aconitum hemsleyanum* var. *hemsleyanum*

瓜叶乌头(原变种) *gua ye wu tou* (yuan bian zhong) *Aconitum hemsleyanum* E. Pritzl var. *leucanthum* P. Guo & M. R. Jia; *A. sczukinii* Turczaninow var. *hemsleyanum* Rapaics.

Branchlet glabrous. Leaves cordate at base, distal ones without bulbils. Pedicels glabrous or appressed pubescent. Bracteoles and sepals abaxially glabrous. Petals glabrous; spur not circinate, ca. 2 mm. Persistent style ca. 2.5 mm.

• Forests, scrub; 1700–2200 m. W Anhui, W Henan, Hubei, N Hunan, N Jiangxi, S Shaanxi, Sichuan, NW Zhejiang.

106b. *Aconitum hemsleyanum* var. *circinatum* W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 76. 1965.

拳距瓜叶乌头 *quan ju gua ye wu tou*

Leaves cordate at base, distal ones without bulbils. Bracteoles and sepals abaxially glabrous. Petaline spur circinate, 4–6 mm. Persistent style ca. 2.5 mm.

Scrub; 2300–2900 m. NW Guizhou (Panxian Tequ), W Sichuan (Ebian Xian, Emei Xian), ?Yunnan [Myanmar].

106c. *Aconitum hemsleyanum* var. *elongatum* W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 77. 1965.

长距瓜叶乌头 *chang ju gua ye wu tou*

Leaves cordate at base, distal ones without bulbils. Bracteoles and sepals abaxially glabrous. Petaline spur circinate, ca. 8 mm. Persistent style ca. 2.5 mm.

• Forest margins; 1900–3300 m. W Sichuan.

106d. *Aconitum hemsleyanum* var. *chingtungense* (W. T. Wang) W. T. Wang, *Fl. Reipubl. Popularis Sin.* 27: 236. 1979.

截基瓜叶乌头 *jie ji gua ye wu tou*

Aconitum chingtungense W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 77. 1965.

Leaves subtruncate at base. Persistent style 5–5.5 mm.

• Mountains; ca. 3100. W Yunnan (Jingdong Xian).

106e. *Aconitum hemsleyanum* var. *atropurpureum* (Handel-Mazzetti) W. T. Wang, *Fl. Reipubl. Popularis Sin.* 27: 236. 1979.

展毛瓜叶乌头 *zhan mao gua ye wu tou*

Aconitum atropurpureum Handel-Mazzetti, *Acta Horti Gothob.* 13: 124. 1939.

Caudex 1.6–3 cm, ca. 1.6 in diam. Leaves cordate at base, distal ones without bulbils. Bracteoles and sepals abaxially glabrous. Pedicels spreading pubescent. Upper sepal cylindric-galeate, not clawed. Petals pubescent; spur ca. 1.5 mm. Persistent style ca. 2.5 mm.

• Mountains; 2100–3100 m. C Sichuan (Guan Xian).

106f. *Aconitum hemsleyanum* var. *unguiculatum* W. T. Wang, *Fl. Reipubl. Popularis Sin.* 27: 607. 1979.

瓜盔瓜叶乌头 *zhao kui gua ye wu tou*

Caudex 5.5–10 cm, 2.5–2.8 in diam. Leaves cordate at base, distal ones without bulbils. Bracteoles and sepals abaxially glabrous. Pedicels spreading pubescent. Upper sepal clawed, claw ca. 5 mm. Petals glabrous, high galeate; spur ca. 6 mm. Persistent style ca. 2.5 mm.

• Forest margins; ca. 3100 m. NW Yunnan (Weixi Lisu Zu Zizhixian).

106g. *Aconitum hemsleyanum* var. *hsiae* (W. T. Wang) W. T. Wang, *Fl. Reipubl. Popularis Sin.* 27: 238. 1979.

珠芽瓜叶乌头 *zhu ya gua ye wu tou*

Aconitum hsiae W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 78. 1965. Leaves cordate at base, distal ones abaxially with a globose bulbil. Petaline spur ca. 1 mm. Persistent style ca. 2.5 mm.

• Grassy slopes; SE Xizang (Cona Xian).

106h. *Aconitum hemsleyanum* var. *lasianthum* W. T. Wang & L. Q. Li, *Acta Phytotax. Sin.* 25: 29. 1987.

毛萼瓜叶乌头 *mao e gua ye wu tou*

Leaves cordate at base, distal ones without bulbils. Bracteoles and sepals pubescent on both surfaces. Upper sepal with indistinct abaxial hairs. Petals glabrous; spur more than 1.5 mm. Persistent style ca. 2.5 mm.

• Scrub; 3200–3300 m. W Sichuan (Muli Zang Zu Zizhixian).

106i. *Aconitum hemsleyanum* var. *pilopetalum* W. T. Wang & L. Q. Li, *Acta Phytotax. Sin.* 25: 29. 1987.

毛瓣瓜叶乌头 *mao ban gua ye wu tou*

Leaves cordate at base, distal ones without bulbils. Rachis glabrous or appressed pubescent; bracteoles glabrous. Sepals abaxially pubescent, hairs of upper

sepal ca. 8 mm. Petaline spur more than 1.5 mm, lip and spur sparsely pubescent. Persistent style ca. 2.5 mm

• Shaded places in forests; 3200–3300 m. W Sichuan (Muli Zang Zu Zizhixian).

106j. *Aconitum hemsleyanum* var. *puberulum* W. T. Wang & L. Q. Li, *Acta Bot. Yunnan.* 8: 260. 1986.

毛枝瓜叶乌头 *mao zhi gua ye wu tou*

Branchlet sparsely pubescent. Leaves cordate at base, distal ones without bulbils. Bracteoles and sepals abaxially glabrous. Pedicels glabrous or appressed pubescent. Petals glabrous; spur circinate, 6–7 mm. Persistent style ca. 2.5 mm.

• Scrub; 3200–3500 m. Xizang (Nyingchi Xian).

106k. *Aconitum hemsleyanum* var. *xizangense* W. T. Wang & L. Q. Li, *Acta Phytotax. Sin.* 32(5): 470. 1994.

西藏瓜叶乌头 *xi zang gua ye wu tou*

Leaves cordate at base, distal ones without bulbils. Rachis spreading pubescent; bracteoles glabrous. Sepals abaxially pubescent. Petaline lip and spur glabrous, spur more than 1.5 mm. Persistent style ca. 2.5 mm.

• About 2900 m. S Xizang (Nang Xian).

107. *Aconitum refractarpum* Chang ex W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 77. 1965.

弯果乌头 *wan guo wu tou*

Caudex unknown. Stem twining, branched, glabrous. Cauline leaves long petiolate; petiole 6–9 cm, glabrous; leaf pentagonal or ovate-pentagonal, 5–5.5 × 7–9 cm, abaxially appressed pubescent, adaxially glabrous, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence sparsely 2- or 3-flowered; rachis and pedicels glabrous; bracts broadly rhombic, 3-lobed or unlobed. Pedicels 5–14 cm, with 2 bracteoles near middle; bracteoles shortly stipitate or sessile, elliptic or spatulate, 3.5–25 × 1.5–10 cm. Sepals green, abaxially glabrous; lower sepals ca. 1.4 cm; lateral sepals broadly obovate, ca. 1.5 cm; upper sepal high galeate, ca. 2.5 cm high, lower margin oblique upward, suberect, ca. 1.9 cm. Petals ca. 1.8 cm; claw sparsely pubescent; limb glabrous; lip ca. 4.5 cm, slightly concave; spur incurved, ca. 2.5 mm. Stamens glabrous; filaments entire. Carpels 3–5, glabrous. FollICLES ca. 1.5 cm. Seeds ca. 3 mm. Fl. Aug–Sep.

• Forests; ca. 3200 m. NW Yunnan (Bijiang Xian).

108. *Aconitum weixiense* W. T. Wang, *Acta Bot. Yunnan.* 4: 132. 1982.

维西乌头 *wei xi wu tou*

Caudex unknown. Stem twining, branched; branches sparsely retrorse white pubescent. Cauline leaves long petiolate; petiole ca. 5.5 cm, sparsely retrorse and spreading pubescent; leaf blade pentagonal, ca. 12 × 22 cm, papery, abaxially retrorse pubescent at veins, adaxially sparsely appressed pubescent or subglabrous, base broadly cordate, 3-parted; central lobe rhombic, apex long acuminate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence ca. 10 cm, several flowered; rachis and pedicels villous; bracts 3-parted,

0.6–2 cm. Pedicels 2–2.5 cm, with 2 or 3 bracteoles at or above middle; bracteoles linear, 2–3 mm, villous. Sepals white; lower sepals lanceolate-oblong, ca. 1.2 cm, abaxially sparsely villous; lateral sepals obliquely broadly obovate, ca. 1.4 cm, abaxially sparsely villous; upper sepal galeate, ca. 1.5 high, shortly clawed, ca. 3 mm, beak ca. 1.5 mm, 1.5–1.6 cm from base to beak. Petals ca. 2.1 cm, glabrous; claw ca. 1.5 cm; limb ca. 9 mm; lip ca. 4 mm, 2-lobed; spur decurved, ca. 3 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3, glabrous.

• Mountain summits. NW Yunnan (Weixi Lisu Zu Zizhixian).

109. *Aconitum crassicaule* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 607. 1979.

粗茎乌头 *cu jing wu tou*

Caudex obovate-conical, to 5.5 cm, to 1.6 cm in diam. Stem twining, ca. 3 m tall, base 1.2–2.4 cm in diam., branched, apically sparsely retrorse pubescent. Cauline leaves with petiole 4–8 cm, sparsely retrorse pubescent; leaf blade pentagonal or ovate-pentagonal, 7–8.5 × ca. 10 cm, both surfaces becoming glabrous, base cordate, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 2-lobed. Inflorescence 5–10-flowered; rachis and pedicels glabrous or nearly so; proximal bracts leaflike, others ovate-linear. Pedicels 1.6–3 cm, proximally with 2 bracteoles; bracteoles linear or linear-subulate, ca. 3 mm, usually glabrous. Sepals blue-purple, abaxially glabrous; lower sepals ca. 1.2 cm; lateral sepals 1–1.5 cm; upper sepal galeate or navicular-galeate, 2.5–4 mm from base to beak. Petals glabrous; claw sometimes slightly geniculate at apex; lip ca. 4.5 mm, slightly concave; spur incurved, ca. 1.5 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Follicles erect, ca. 1.3 cm; persistent style ca. 2.2 mm. Seeds ca. 1.5 mm. Fl. Aug–Sep.

• Forests; 2800–3300 m. NW Yunnan.

110. *Aconitum tsaii* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 79. 1965.

碧江乌头 *bi jiang wu tou*

Caudex unknown. Stem twining, branched, glabrous, or spreading and retrorse pubescent. Middle cauline leaves slightly long petiolate; petiole 3–7 cm, glabrous, base cordate, 3-parted; central lobe rhombic or broadly rhombic, apex shortly acuminate, subpinnately lobed; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence 15–20 cm, ca. 10-flowered; rachis and pedicels glabrous, or retrorse pubescent; proximal bracts leaflike, distal ones shortly stipitate, oblong. Pedicels 1.6–3.5 cm, with 2 bracteoles near middle; bracteoles shortly stipitate, obovate or spatulate, sometimes elliptic, margin entire, rarely dentate. Sepals green or purple, abaxially glabrous; lower sepals ca. 1.5 cm; lateral sepals ca. 1.6 cm; upper sepal galeate, short, 1.8–2.3 cm high, not clawed, beak slightly upward curved, ca. 1.8 cm from base to beak, lower margin oblique upward, concave. Petals glabrous; claw erect or geniculate at apex, or not geniculate; lip ca. 4 mm, slightly concave; spur circinate, ca. 3 mm, glabrous.

Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Aug.

• Scrub, grassy slopes; 3200–4100 m. NW Yunnan (Bijiang Xian).

1a. Stem glabrous; rachis and pedicels glabrous; sepals green or purple 110a. var. *tsaii*

1b. Stem spreading and retrorse pubescent; rachis and pedicels retrorse pubescent; sepals blue 110b. var. *puberulum*

110a. *Aconitum tsaii* var. *tsaii*

碧江乌头(原变种) *bi jiang wu tou (yuan bian zhong)*

Aconitum tsaii f. *geniculatum* W. T. Wang; *A. tsaii* f.

purpureum W. T. Wang.

Stem glabrous. Rachis and pedicels glabrous. Sepals green or purple.

• Grassy slopes; 3200–4000 m. NW Yunnan (Bijiang Xian).

110b. *Aconitum tsaii* var. *puberulum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 607. 1979.

毛茎碧江乌头 *mao jing bi jiang wu tou*

Stem spreading and retrorse pubescent. Rachis and pedicels retrorse pubescent. Sepals blue.

• Scrub, grassy slopes; ca. 4100 m. NW Yunnan (Bijiang Xian).

111. *Aconitum bulbiferum* Handel-Mazzetti, Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 62: 220. 1925.

珠芽乌头 *zhu ya wu tou*

Caudex terete, 1.5–3 cm. Stem twining, 1.5–2.5 m tall, apically pubescent; bulbils usually axillary, dark purple, to 6 mm, deciduous. Leaves long petiolate; petiole 8–18 cm; leaf blade cordate-pentagonal, 5.5–9 × 6–9 cm, both surfaces glabrous, 3-parted; central lobe rhombic-ovate, apex long acuminate; lateral lobes obliquely flabellate, unequally 2-fid slightly beyond middle. Inflorescence 1–6-flowered; bracts leaflike; rachis and pedicels retrorse and appressed pubescent. Pedicels 1.5–4.5 cm, with 2 bracteoles at middle; bracteoles leaflike. Sepals blue, abaxially glabrous or nearly so, adaxially white pubescent; lower sepals ca. 1.8 cm; lateral sepals 1.8–2 cm; upper sepal high galeate, 2.5–3 cm high, lower margin oblique upward, slightly concave, 1.5–1.8 cm. Petals glabrous; lip 6–7 mm, 2-lobed at apex; spur incurved, circinate, ca. 1 cm, apex subglobose. Stamens glabrous; filaments 2-denticulate or entire. Carpels 5, glabrous. Fl. Sep.

• Mountains; ca. 3600 m. SW Sichuan (Huili Xian).

112. *Aconitum habaense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 80. 1965.

哈巴乌头 *ha ba wu tou*

Caudex carrot-shaped, ca. 4.5 cm, ca. 1.5 cm in diam. Stem twining, 1.5–2.4 m, sparsely retrorse and appressed pubescent. Proximal cauline leaves withered at anthesis, and middle ones slightly long petiolate; petiole 4–8 cm; leaf blade pentagonal, 5.5–8 × 10–11 cm, abaxially nearly glabrous, adaxially sparsely appressed pubescent, 3-parted; central lobe broadly rhombic, apex acuminate or long acuminate; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 50–85 cm, 16–19-flowered;

rachis and pedicels densely retrorse yellowish pubescent; bracts usually leaflike, distal ones linear, smaller. Pedicels 2.2–7 cm, oblique upward, with 2 bracteoles proximally or distally; bracteoles linear, 6–10 × 0.4–1 mm. Sepals blue-purple, abaxially densely pubescent; lower sepals ca. 2 cm; lateral sepals ca. 2.1 cm; upper sepal galeate, ca. 2.2 cm high, shortly beaked, 2–2.2 cm from base to beak, lower margin slightly concave. Petals glabrous; claw geniculate at apex; limb ca. 8 mm; lip ca. 5 mm, 2-lobed at apex; spur subcircinate, ca. 3 mm. Stamens glabrous; filaments entire, rarely 1- or 2-denticulate. Carpels 5, glabrous. Fl. Aug.

• Scrub; ca. 3600 m. NW Yunnan (Zhongdian Xian).

113. *Aconitum chuanum* W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 80. 1965.

拟哈巴乌头 ni ha ba wu tou

Caudex narrowly obconical, 4.5–6 cm, ca. 1.5 cm in diam. Stem basally erect, apically twining, 1.2–1.6 m, apically branched, sparsely retrorse pubescent, with leaves equally arranged along stem. Middle cauline leaves slightly long petiolate; petiole ca. 5 cm, sparsely pubescent; leaf blade pentagonal, ca. 7.8 × 11 cm, both surfaces sparsely appressed pubescent at veins, base cordate, 3-parted; central lobe rhombic, apex acuminate, 3-fid; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 12–14 cm, ca. 11-flowered; rachis and pedicels densely retrorse pubescent; proximal bracts leaflike, distal ones linear. Pedicels 1–3 cm, oblique upward, with 2 bracteoles above middle; bracteoles linear, 7–10 mm. Sepals deep-purple, abaxially pubescent; lower sepals ca. 1.2 cm; lateral sepals broadly obovate, ca. 1.4 cm; upper sepal galeate, ca. 1.5 cm high, shortly beaked, ca. 1.7 cm from base to beak, lower margin slightly concave. Petals glabrous, ca. 1.8 cm; limb ca. 8.5 × 3.2 mm; lip ca. 4 mm, slightly concave; spur incurved, ca. 1.5 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Aug.

• Scrub; ca. 3800 m. NW Yunnan (Zhongdian Xian).

114. *Aconitum elwesii* Stapf, *Ann. Roy. Bot. Gard. (Calcutta)* 10: 174. 1905.

藏南乌头 zang nan wu tou

Caudex unknown. Stem twining, branched, sparsely retrorse pubescent. Middle cauline leaves long or shortly petiolate; petiole 2.4–8 cm; leaf blade cordate-pentagonal, 4.5–12 × 6–13 cm, both surfaces sparsely appressed pubescent, 3-parted; central lobe ovate-narrowly rhombic; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence (1-or)2–4-flowered; rachis and pedicels retrorse pubescent; bracts leaflike. Pedicels 2–4 cm, with 2 bracteoles at middle; bracteoles subulate, ca. 4 mm, sometimes bracteoles below inflorescence narrowly ovate, 3-fid or unlobed. Sepals black-purple, abaxially sparsely pubescent or nearly glabrous; lower sepals ca. 1.4 cm; lateral sepals ca. 1.5 cm; upper sepal high galeate, 1.8–2 cm high, not clawed, 1.4–1.8 cm from base to beak, lower margin

concave, oblique upward. Petals glabrous; lip narrow, ca. 6 mm; spur circinate, ca. 4 mm. Stamens glabrous; filaments 2-denticulate or entire. Carpels 5, glabrous. Fl. Aug.

Forests, scrub; S Xizang (Nyalam Xian) [Nepal, Sikkim].

115. *Aconitum longilobum* W. T. Wang, *Acta Phytotax. Sin.*, Addit. 1: 81. 1965.

长裂乌头 chang lie wu tou

Caudex carrot-shaped, 4.2–5.5 cm, 7–9 mm in diam. Stem twining, branched, retrorse or spreading pubescent or apically glabrous. Middle cauline leaves long petiolate; petiole ca. 4.6 cm, sparsely spreading pubescent; leaf blade pentagonal or suborbicular, 5–11 × 8–14 cm, abaxially glabrous, adaxially sparsely appressed pubescent at veins, base cordate, 3–5-parted; central lobe rhombic, apex acuminate, pinnately lobed; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence 4–8-flowered; rachis and pedicels glabrous; bracts leaflike. Pedicels 3–4.5 cm, proximally with 2 bracteoles; bracteoles narrowly oblong to linear-subulate, 4–7 × 0.5–1.2 mm, glabrous. Sepals purple, abaxially glabrous; lower sepals ca. 1.4 cm; lateral sepals ca. 1.5 cm; upper sepal galeate, 1.8–2 cm, lower margin ca. 1.6 cm. Petals ca. 1.8 cm, glabrous; claw geniculate at upper part; lip ca. 4 mm, slightly concave; spur incurved, ca. 2 mm, subglobose. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Aug.

• E Xizang (Nyingchi Xian).

116. *Aconitum austroyunnanense* W. T. Wang in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 81. 1965.

滇南乌头 dian nan wu tou

Caudex carrot-shaped, 6–7 cm, 0.7–1.3 cm in diam., sometimes subterete, small, to 12 cm. Stem twining, curved, branched, pubescent, with leaves equally arranged along stem. Middle cauline leaves long petiolate; petiole 5.5–7.5 cm, retrorse pubescent; leaf blade pentagonal, 8–10 × 9–14 cm, abaxially sparsely pubescent at veins, adaxially sparsely pubescent, 3-parted; central lobe rhombic or broadly rhombic, apex acuminate; lateral lobes obliquely flabellate, unequally 2-fid. Inflorescence 4–12 cm, 2–6-flowered; rachis and pedicels ± densely retrorse pubescent; bracts leaflike. Pedicels 2.5–3.5 cm, with 2 bracteoles near middle; bracteoles narrowly linear or subulate, 3–7 mm. Sepals blue-purple, abaxially sparsely pubescent; lower sepals ca. 1.5 cm; lateral sepals oblique, ca. 1.6 cm; upper sepal galeate, 2.3–2.6 cm high, middle 0.9–1.3 cm in diam., beak 2–6 mm, 1.8–2.1 cm from base to beak, lower margin concave. Petals glabrous; limb ca. 1.1 × 0.4 cm; lip ca. 6 mm, slightly concave; spur incurved, ca. 3 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Follicles 2–2.2 cm. Seeds ca. 3.5 mm. Fl. Oct, fr. Oct–Nov. $2n = 16^*$.

• Scrub; 1700–2500 m. Yunnan (Jingdong Xian, Xinping Yi-Dai Zu Zizhixian).

117. *Aconitum vilmorinianum* Komarov, *Repert. Spec. Nov. Regni Veg.* 7: 145. 1909.

黄草乌 huang cao wu

Caudex ellipsoid-globose or carrot-shaped, 2.7–7 cm, ca. 1 cm in diam. Stem twining, to 4 m, branched, sparsely retrorse pubescent or nearly glabrous. Leaves with petiole 5–10 cm; leaf blade papery, abaxially sparsely pubescent at veins, base broadly cordate, 3-sect or nearly to base; central segment broadly rhombic, apex acute or shortly acuminate; lateral segments obliquely flabellate, unequally 2-parted slightly beyond middle. Inflorescence 3–6-flowered; rachis and pedicels densely retrorse yellowish pubescent or spreading pubescent; bracts linear. Pedicels 2–4 cm, with 2 bracteoles at middle or below; bracteoles narrowly linear, 3–5 × 0.3–0.5 mm, densely pubescent. Sepals purple-blue, abaxially densely pubescent; lower sepals ca. 1.3 cm; lateral sepals 1.3–1.4 cm; upper sepal 1.5–1.6 cm high, shortly beaked. Petals glabrous; lip ca. 6 mm, slightly concave; spur incurved, ca. 3 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 5, glabrous or ovary sparsely pubescent at upper part. Follicles erect, 1.6–1.8 cm, glabrous. Seeds ca. 3 mm. Fl. Aug–Oct. $2n = 16^*$.

• Scrub, mountains; 2100–3000 m. W Guizhou, SW Sichuan, C and N Yunnan.

- 1a. Rachis and pedicels densely retrorse yellowish pubescent 117a. var. *vilmorinianum*
1b. Rachis and pedicels densely spreading pubescent 117b. var. *patentipilum*

117a. *Aconitum vilmorinianum* var. *vilmorinianum*

黄草乌(原变种) huang cao wu (yuan bian zhong)

Aconitum mairei H. Léveillé.

Rachis and pedicels densely retrorse yellowish pubescent.

• Scrub; 2100–2500 m. W Guizhou, Sichuan (Huili Xian), C Yunnan.

117b. *Aconitum vilmorinianum* var. *patentipilum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 82. 1965.

展毛黄草乌 zhan mao huang cao wu

Rachis and pedicels densely spreading pubescent.

• Mountains; 2300–3000 m. SW Sichuan (Huili Xian, Muli Zang Zu Zizhixian), N Yunnan.

118. *Aconitum pseudostapfianum* W. T. Wang, Acta Phytotax. Sin. 12: 156. 1974.

拟玉龙乌头 ni yu long wu tou

Aconitum tuguanconense Q. E. Yang.

Caudex unknown. Stem twining, branched, sparsely retrorse pubescent or nearly glabrous. Middle cauline leaves long petiolate; petiole 7.5–10 cm, sparsely pubescent; leaf blade cordate-pentagonal, 7–9.5 × 12–14 cm, abaxially sparsely pubescent at veins, adaxially sparsely strigose, 3-parted; central lobe broadly rhombic, 3-fid at middle; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence to 9 cm, 3–10-flowered; rachis and pedicels glabrous; basal bracts

leaflike, others narrowly linear, ca. 4 mm. Pedicels decurved, to 3.8 cm, with 2 bracteoles at middle or below; bracteoles narrowly linear or subulate, 3–4 mm. Sepals blue-violet, abaxially glabrous; lower sepals 1–1.5 cm; lateral sepals 1.1–1.6 cm; upper sepal galeate, 1.8–2.2 cm, shortly beaked, lower margin concave. Petals ca. 1.8 cm, glabrous; limb ca. 1 cm; lip ca. 5 mm, 2-lobed at apex; spur circinate, ca. 3.5 mm. Stamens glabrous; filaments entire. Carpels 5(–10), glabrous. Follicles erect, 1–2.4 cm; persistent style ca. 2.5 mm. Seeds ca. 3 mm. Fl. Sep.

• Scrub; 2800–3000 m. NW Yunnan (Lijiang Naxi Zu Zizhixian).

119. *Aconitum validinerve* W. T. Wang, Acta Bot. Yunnan. 6: 369. 1984.

显脉乌头 xian mai wu tou

Caudex obconical, 3.5–4 cm. Stem basally erect, apically twining, 1–2 m, ca. 7 mm in diam., branched, retrorse and appressed pubescent. Petiole 1–2.2 cm; leaf blade cordate-pentagonal, ca. 6 × 7.5 cm, papery, abaxially sparsely pubescent at veins, adaxially appressed pubescent with convex veins, base cordate, 3-parted; central lobe rhombic, apex long acuminate, subpinnately lobed; lateral lobes unequally 2-fid nearly to middle. Inflorescence 1.5–4 cm, 2–4-flowered; rachis sparsely retrorse pubescent; bracts linear, ca. 7 mm, proximal ones leaflike. Pedicels 1.2–2.5 cm, glabrous or subglabrous, proximally with 2 bracteoles; bracteoles linear, 3–4 mm. Sepals purple-blue, abaxially glabrous; lower sepals oblong or linear-lanceolate, 1.1–1.3 cm; lateral sepals obliquely broadly obovate, 1.3–1.6 × ca. 1.3 cm; upper sepal galeate, 1.6–1.9 cm high, beak indistinct, lower margin 1.5–1.8 cm. Petals ca. 1.5 cm; claw pilose; lip ca. 4 mm, 2-lobed at apex, glabrous; spur circinate, ca. 4 mm, glabrous. Stamens glabrous; filaments entire. Carpels 5, glabrous.

• Grasslands. SW Sichuan (Muli Zang Zu Zizhixian).

120. *Aconitum stapfianum* Handel-Mazzetti, Symb. Sin. 7: 294. 1931.

玉龙乌头 yu long wu tou

Caudex narrowly obconical or carrot-shaped, 3–7.5 cm, 1–3.8 cm in diam. Stem twining, ca. 3 m, branched, becoming glabrous. Petiole 4–9 cm; leaf blade pentagonal, 4.8–8.5 (–11.5) × 5.2–10(–14) cm, abaxially glabrous, adaxially very sparsely pubescent, base cordate, 3-parted or -lobed nearly to base; central lobe ovate-rhombic, apex acuminate, subpinnately parted; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence 3–8-flowered; rachis glabrous or sparsely retrorse pubescent; proximal bracts leaflike, others oblong-linear or linear. Pedicels 2–6 cm, glabrous or spreading pubescent, apex curved, with 2 bracteoles at middle or below; bracteoles narrowly linear, 2.5–5 mm. Sepals blue; lower sepals 1.1–1.3 cm; lateral sepals orbicular-obovate, 1.3–1.5 cm; upper sepal galeate, 1.9–2.2 cm high, abaxially glabrous,

lower margin 1.5–1.8 cm, oblique upward. Petals glabrous; limb ca. 1 cm; lip ca. 5.5 mm; spur incurved, ca. 4 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 5, glabrous. Follicles erect, ca. 1.8 cm. Fl. Sep–Oct. $2n = 16^*$.

• Scrub; 2800–3400 m. NW Yunnan.

1a. Pedicels glabrous 120a. var. *stapfianum*

1b. Pedicels spreading pubescent ... 120b. var. *pubipes*

120a. *Aconitum stapfianum* var. *stapfianum*

玉龙乌头(原变种) yu long wu tou (yuan bian zhong)

Pedicels glabrous.

• Scrub; 2800–3400 m. NW Yunnan (Lijiang Naxi Zu Zizhixian).

120b. *Aconitum stapfianum* var. *pubipes* W. T. Wang, Acta Phytotax. Sin. 31: 206. 1993.

毛梗玉龙乌头 mao geng yu long wu tou

Pedicels spreading pubescent.

• Scrub; ca. 2800 m. NW Yunnan (Lijiang Naxi Zu Zizhixian).

121. *Aconitum episcopale* H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 341. 1914.

西南乌头 xi nan wu tou

Caudex obconical, ca. 5 cm, ca. 18 cm in diam. Stem twining, branched, apically sparsely spreading or retrorse pubescent. Leaves long petiolate; petiole ca. 7 cm, retrorse pubescent or nearly glabrous; leaf blade orbicular-pentagonal, ca. 7.5×10 cm, both surfaces sparsely pubescent or nearly glabrous, base cordate, 3-sect or -parted to base; central segment rhombic or ovate-rhombic, apex acuminate; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence 4–8-flowered; rachis densely spreading yellowish pubescent; bracts linear. Pedicels appressed white pubescent or subglabrous, or spreading yellowish glandular pubescent, 1.3–3 cm, with 2 bracteoles at middle or below; bracteoles linear, $3-8 \times 0.3-0.5$ mm, densely spreading pubescent. Sepals blue-purple, abaxially sparsely pubescent; lower sepals ca. 1.3 cm; lateral sepals 1.2–1.4 cm; upper sepal high galeate or cylindric-galeate, 2–2.4 cm high, shortly beaked, 1.4–1.6 cm from base to beak, lower margin slightly concave. Petals glabrous; lip ca. 4.5 mm; spur incurved, ca. 3 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels (3–)5, yellowish pubescent or glabrous. Follicles 1.1–1.4 cm. Seeds ca. 2.5 mm. Fl. Jul–Nov. $2n = 16^*$.

• Mountains, forests; 2200–3200 m. W Guizhou, SW Sichuan, Yunnan.

1a. Pedicels appressed white pubescent or subglabrous; sepals abaxially white pubescent 121a. var. *episcopale*

1b. Pedicels and sepals abaxially spreading yellowish glandular pubescent 121b. var. *villosulipes*

121a. *Aconitum episcopale* var. *episcopale*

西南乌头(原变种) xi nan wu tou (yuan bian zhong)

Aconitum delavayi Franchet var. *leiocarpum* Finet & Gagnepain; *A. tripartitum* H. R. Fletcher & Lauener; *A. vimorinianum* var. *altifidum* W. T. Wang.

Pedicels appressed white pubescent or subglabrous. Sepals abaxially white pubescent.

• Mountains, forests; 2400–3200 m. W Guizhou, SW Sichuan, N Yunnan.

121b. *Aconitum episcopale* var. *villosulipes* W. T. Wang, Acta Phytotax. Sin. 31: 204. 1993.

紫乌头 zi wu tou

Pedicels and sepals abaxially spreading yellowish glandular pubescent.

• Mountains; 2200–3100 m. NW and W Yunnan.

122. *Aconitum campylorrhynchum* Handel-Mazzetti, Acta Horti Gothob. 13: 126. 1939.

弯喙乌头 wan hui wu tou

Caudex carrot-shaped, to 10 cm, ca. 6 mm in diam.

Stem twining, 1–2 m tall, apically branched, with leaves equally arranged along stem. Cauline leaves with petiole 2.2–4.5 cm; leaf blade ovate-pentagonal or pentagonal, $4.8-8 \times 4.2-10(-14)$ cm, both surfaces sparsely pubescent or becoming glabrous, 3-parted; central lobe ovate-rhombic, apex acuminate, subpinnately parted; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence 10–40 cm, 10–16-flowered; rachis and pedicels sparsely retrorse or spreading pubescent; proximal bracts leaflike, distal ones linear. Pedicels 2–4.5 cm, or slender to 15 cm, with 2 bracteoles at middle or below; bracteoles subulate-linear, $2.5-4.5 \times ca. 0.3$ mm. Sepals blue-purple or purplish white; lower sepals ca. 1.4 cm; lateral sepals 1.3–1.6 cm; upper sepal galeate or high galeate, 2–2.8 cm high, not clawed, abaxially sparsely pubescent, usually becoming glabrous, beak ca. 5 mm, lower margin oblique upward. Petals glabrous; lip ca. 5.5 mm; spur ca. 2.5 mm. Stamens glabrous; filaments entire. Carpels 5, sparsely appressed pubescent. Follicles 1.2–1.7 cm. Seeds 2.5–3 mm. Fl. Aug–Oct.

• *Picea* forests, scrub, by streams; 3200–4000 m. SW Gansu, Sichuan.

1a. Pedicels spreading pubescent 122b. var. *patentipilum*

1b. Pedicels sparsely retrorse pubescent.

2a. Sepals blue-purple; pedicels

2–4.5 cm 122a. var. *campylorrhynchum*

2b. Sepals purplish white;

pedicels to 15 cm 122c. var. *tenuipes*

122a. *Aconitum campylorrhynchum* var. *campylorrhynchum*

弯喙乌头(原变种) wan hui wu tou (yuan bian zhong)

Pedicels 2–4.5 cm, sparsely retrorse pubescent. Sepals blue-purple.

• *Picea* forests, scrub; 3200–4000 m. SW Gansu, Sichuan.

122b. *Aconitum campylorrhynchum* var. *patentipilum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 83. 1965.

展毛弯喙乌头 zhan mao wan hui wu tou

Pedicels spreading pubescent.

• By streams; 3200–3300 m. NW Sichuan.

122c. *Aconitum campylorrhynchum* var. *tenuipes* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 83. 1965.

细梗弯喙乌头 xi geng wan hui wu tou

Pedicels subfilamentous, to 15 cm, slender, sparsely retrorse pubescent. Sepals purplish white.

• Mountains; ca. 3600 m. Gansu (Min Xian).

123. *Aconitum lioui* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 83. 1965.

秦岭乌头 qin ling wu tou

Caudex unknown. Stem twining, usually purple, middle ca. 2.5 mm in diam., branched. Cauline leaves with petiole ca. 3.2 cm, retrorse pubescent; leaf blade pentagonal, ca. 7.5 × 9 cm, abaxially sparsely pubescent at veins, adaxially sparsely appressed pubescent, 3-sect; central segment narrowly rhombic, shortly stipitate, apex acuminate; lateral segments nearly sessile, obliquely flabellate, unequally 2-parted. Inflorescence 2–4 cm, 2–5-flowered; rachis and pedicels densely retrorse and appressed pubescent; basal bracts 3-fid, others linear. Pedicels 1.5–2 cm, with 2 bracteoles near middle; bracteoles subulate, 3.5–5 × ca. 0.4 mm, pubescent. Sepals blue-purple when dried, abaxially pubescent; lower sepals ca. 1.3 cm; lateral sepals 1.2–1.4 cm; upper sepal galeate, ca. 1.7 cm high, with a beak ca. 5 mm, ca. 1.5 cm from base to beak, lower margin concave. Petals sparsely pubescent; limb ca. 8.5 mm; lip ca. 3.5 mm, 2-lobed; spur incurved, ca. 1.4 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 5, appressed pubescent. Fl. Sep.

• Mountains; 2900–3000 m. Shaanxi (Taibai Shan).

124. *Aconitum sungpanense* Handel-Mazzetti, Acta Horti Gothob. 13: 130. 1939.

松潘乌头 song pan wu tou

Caudex oblong, ca. 3.5 cm. Stem twining, to 2.5 m, branched, glabrous or nearly so. Middle cauline leaves slightly long petiolate; petiole 2.5–6 cm; leaf blade pentagonal, 5.8–10 × 8–12 cm, herbaceous or papery, both surfaces sparsely pubescent, 3-sect; segments nearly sessile or distinctly stipitate; central segment obliquely rhombic; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence 5–9-flowered; rachis and pedicels glabrous or sparsely retrorse or spreading pubescent; proximal bracts 3-fid, others linear. Pedicels 2–4 cm, with 2 bracteoles at middle or above; bracteoles linear-subulate, 3.5–4.5 mm. Sepals pale blue-purple, sometimes yellow-green or white, abaxially glabrous or sparsely pubescent; lower sepals 1.2–1.4 cm; lateral sepals 1.3–1.5 cm; upper sepal high galeate, 1.8–2.2 cm high, shortly beaked, middle 7–9 mm in diam., lower margin 1.4–1.5 cm, slightly concave. Petals glabrous or sparsely pubescent; lip 4–5 mm, slightly concave; spur incurved, 1–2 mm. Stamens glabrous or sparsely pubescent; filaments entire. Carpels (3–)5, glabrous or ovary sparsely appressed

pubescent. Follicles 1–1.5 cm, glabrous or sparsely pubescent. Seeds ca. 3 mm. Fl. Aug–Sep. $2n = 16^*$.

• Forest margins, scrub; 1400–3000 m. S Gansu, Hunan, S Ningxia, E Qinghai, S Shaanxi, S Shanxi, N and NE Sichuan.

1a. Rachis and pedicels spreading

pubescent 124c. var. *villosulum*

1b. Rachis and pedicels glabrous or retrorse pubescent.

2a. Sepals pale blue-purple, sometimes yellow-green; leaf blade herbaceous

..... 124a. var. *sungpanense*

2b. Sepals white; leaf blade

papery 124b. var. *leucanthum*

124a. *Aconitum sungpanense* var. *sungpanense*

松潘乌头(原变种) song pan wu tou (yuan bian zhong)

Leaf blade herbaceous. Rachis and pedicels glabrous or retrorse pubescent. Sepals pale blue-purple, sometimes yellow-green.

• Forest margins, scrub; 1400–3000 m. S Gansu, S Ningxia, E Qinghai, S Shaanxi, S Shanxi, N Sichuan.

124b. *Aconitum sungpanense* var. *leucanthum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 84. 1965.

白花松潘乌头 bai hua song pan wu tou

Leaf blade papery. Rachis and pedicels glabrous or retrorse pubescent. Sepals white.

• Scrub; 1400–1800 m. NE Sichuan (Chengkou Xian).

124c. *Aconitum sungpanense* var. *villosulum* W. T. Wang, Bull. Bot. Res., Harbin 9(2): 5. 1989.

展毛松潘乌头 zhan mao song pan wu tou

Rachis and pedicels spreading pubescent.

• About 1600 m. Hunan (Anhua Xian).

125. *Aconitum shensiense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 84. 1965.

陕西乌头 shan xi wu tou

Caudex unknown. Stem twining, branched, sparsely spreading pubescent. Middle cauline leaves slightly long petiolate; petiole ca. 2.5 cm; leaf blade cordate-pentagonal, ca. 8.3 × 10 cm, with short stipe ca. 3.5 mm, lateral segments nearly sessile, appressed pubescent, abaxially glabrous or nearly glabrous, base cordate, 3-sect; central segment narrowly ovate-rhombic, crenate and obliquely flabellate, unequally 2-parted. Inflorescence 8–10 cm, 5–9-flowered; rachis and pedicels spreading and retrorse white pubescent; basal bracts leaflike, others narrowly lanceolate to linear. Pedicels 1.8–2.5 cm, with 2 bracteoles at middle; bracteoles subulate, 2.5–5 × ca. 0.5 mm. Sepals spreading pubescent abaxially; lower sepals ca. 1.1 cm; lateral sepals ca. 1.3 cm; upper sepal high galeate, 1.7–1.8 cm high, not clawed, beak obliquely downward

pointing, 1–1.3 cm from base to beak, lower margin concave. Petals ca. 9.5 mm; limb ca. 7.5 mm; lip ca. 4 mm, 2-lobed at apex; spur incurved, ca. 2 mm, upper part sparsely pubescent. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Aug.

•Mountains; ca. 1600. Shaanxi (Zhouzhi Xian).

126. *Aconitum cannabinifolium* Franchet ex Finet & Gagnepain, Bull. Soc. Bot. France 51: 503. 1904.

大麻叶乌头 da ma ye wu tou

Caudex unknown. Stem twining, apically branched, retrorse pubescent or becoming glabrous. Distal leaves slightly long petiolate; petiole 2.5–6 cm, sparsely retrorse pubescent or nearly glabrous; leaf blade pentagonal, 6.8–10 × 9–11 cm, herbaceous, both surfaces nearly glabrous or adaxially sparsely pubescent, 3-sect; segments long stipitate, slender; central segment lanceolate or oblong-lanceolate, margin densely triangular-dentate, apex acuminate; lateral segments shortly stipitate or sessile, unequally 2-parted usually to base. Inflorescence 3–6-flowered; rachis and pedicels spreading puberulent; bracts linear, small. Pedicels 1.5–3.2 cm, proximally with 2 bracteoles; bracteoles subulate, 2–3 mm. Sepals greenish purple, abaxially pubescent; lower sepals 1–1.1 cm; lateral sepals 1.4–1.6 cm; upper sepal high galeate, 2.1–2.3 cm high, shortly beaked, lower margin slightly concave, 1.4–1.6 cm. Petals glabrous; lip ca. 1.5 mm; spur incurved, ca. 3.5 mm. Stamens glabrous; filaments entire. Carpels 3, sparsely pubescent. Follicles erect, ca. 1.5 cm. Seeds ca. 3.5 mm. Fl. Aug–Sep.

•Forests, by streams; 1300–2000 m. W Hubei, S Shaanxi, NE Sichuan.

127. *Aconitum henryi* E. Pritzl in Diels, Bot. Jahrb. Syst. 29: 329. 1900.

川鄂乌头 chuan e wu tou

Caudex carrot-shaped or obconical, 1.5–3.8 cm. Stem twining, branched, glabrous. Middle cauline leaves shortly or long petiolate; petiole 1.5–6.5 cm; leaf blade ovate-pentagonal, 4–10 × 6.5–12 cm, papery, both surfaces glabrous, or adaxially sparsely appressed pubescent, 3-sect; central segment lanceolate or rhombic-lanceolate; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence (1–)3–6-flowered; rachis and pedicels glabrous or sparsely retrorse pubescent, or spreading pubescent; bracts linear. Pedicels 1.8–3.5(–5) cm, with 2 bracteoles at middle; bracteoles linear-subulate, 3.5–6.5 mm. Sepals blue, abaxially sparsely or densely pubescent or nearly glabrous; lower sepals 1.1–1.3 cm; lateral sepals 1.3–1.8 cm; upper sepal high galeate, 2–2.5 cm high, 6–9 mm in diam. at middle, shortly beaked, lower margin 1.4–1.9 cm, slightly concave. Petals glabrous; lip ca. 8 mm, slightly concave; spur upward curved, 4–5 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous, or ovary sparsely or densely pubescent. Fl. Sep–Oct.

•Forests, scrub, mountains, by streams; 1000–3100 m. S Gansu, W Henan, Hubei, NW Hunan, SE Shaanxi, S Shanxi, Sichuan, W Zhejiang.

- 1a. Leaf segments pinnately parted, lobules sparse, narrowly ovate or lanceolate-linear 127b. var. *compositum*
- 1b. Leaf segments margin sparsely or densely bluntly dentate.
 - 2a. Rachis and pedicels glabrous or sparsely retrorse pubescent .. 127a. var. *henryi*
 - 2b. Rachis and pedicels or only pedicels densely spreading pubescent.
 - 3a. Segments shortly stipitate; carpels glabrous or ovary sparsely pubescent 127c. var. *villosum*
 - 3b. Segments sessile; carpels densely pubescent . 127d. var. *pilocarpum*

127a. *Aconitum henryi* var. *henryi*

川鄂乌头(原变种) chuan e wu tou (yuan bian zhong)

Leaf segments with margin sparsely or densely bluntly dentate. Rachis and pedicels glabrous or sparsely retrorse pubescent.

•Forests; 1000–2000 m. W Hubei, S Sichuan.

127b. *Aconitum henryi* var. *compositum* Handel-Mazzetti, Acta Horti Gothob. 13: 130. 1939.

细裂川鄂乌头 xi lie chuan e wu tou

Leaf segments pinnately parted; lobules sparse, narrowly ovate or lanceolate-linear.

•Mountains; 2100–3100 m. S Gansu, NE Sichuan.

127c. *Aconitum henryi* var. *villosum* W. T. Wang, Reipubl. Popularis Sin. 27: 608. 1979.

展毛川鄂乌头 zhan mao chuan e wu tou

Leaf segments shortly stipitate, with margin sparsely or densely bluntly dentate. Rachis and pedicels or only pedicels densely spreading pubescent. Carpels glabrous or ovary sparsely pubescent.

•Forests, scrub, by streams; 1500–2000 m. W Henan, Hubei, NW Hunan, SE Shaanxi, S Shanxi, NE Sichuan, W Zhejiang.

127d. *Aconitum henryi* var. *pilocarpum* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 29. 1987.

毛果川鄂乌头 mao guo chuan e wu tou

Leaf segments sessile, with margin sparsely or densely bluntly dentate. Rachis and pedicels or only pedicels densely spreading pubescent. Carpels densely pubescent.

•Forests, by streams; 2100–2200 m. SW Sichuan (Muli Zang Zu Zizhixian).

128. *Aconitum sczukinii* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 13: 61. 1840.

宽叶蔓乌头 kuan ye wan wu tou

Aconitum volubile Pallas ex Koelle var. *latisectum* Regel.

Caudex obconical, to 3.5 cm, to 1.2 cm in diam. Stem twining, rarely proximally suberect, branched, sparsely retrorse pubescent. Middle cauline leaves long petiolate; petiole 3.5–5.5 cm, sparsely pubescent; leaf blade ovate-pentagonal, 7–10 × 8–11 cm, abaxially glabrous, adaxially sparsely appressed pubescent, base cordate, 3-sect; segments shortly or long stipitate; central segment rhombic or rhombic-ovate, apex acuminate, below middle 3-fid; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal or axillary, several flowered; rachis and pedicels densely spreading pubescent; bracts linear, small. Pedicels decurved, 1.5–2.5 cm, with 2 bracteoles near middle; bracteoles subulate, 1.5–2 mm. Sepals blue, abaxially densely pubescent; lower sepals 0.7–1 cm; lateral sepals 1.2–1.4 cm; upper sepal high galeate, 1.6–1.9 cm high, lower margin 1.4–1.6 cm, slightly concave. Petals glabrous; limb ca. 9 mm; lip ca. 5 mm; spur incurved or subcircinate, ca. 2 mm. Stamens glabrous or sparsely pubescent. Follicles erect, ca. 2 cm. Seeds ca. 3 mm. Fl. Aug–Sep.

Grassy slopes, forests; 300–1900 m. Heilongjiang, Jilin, Liaoning [Russia (Far East)].

129. *Aconitum volubile* Pallas ex Koelle, Spic. Acon. 21. 1788.

蔓乌头 wan wu tou

Caudex unknown. Stem twining, branched, glabrous or apically sparsely retrorse pubescent. Middle cauline leaves long petiolate; petiole 3.5–6 cm; leaf blade pentagonal, 7–9 × 8–10 cm, papery, abaxially glabrous or nearly so, adaxially sparsely appressed pubescent, base cordate, 3-sect; central segment usually stipitate, rhombic-ovate; lateral segments obliquely flabellate, unequally 2-fid or nearly to base. Inflorescence terminal or axillary, 3–5-flowered; rachis and pedicels densely spreading yellowish pubescent, or retrorse and appressed pubescent; basal bracts 3-fid, others linear. Pedicels 2–3.8 cm, with 2 bracteoles above middle; bracteoles linear, 2–3 mm. Sepals blue-purple, abaxially spreading pubescent, or retrorse and appressed pubescent; lower sepals 0.8–1.3 cm; lateral sepals 1–1.5 cm; upper sepal high galeate, 1.8–2.7 cm, 1–1.5 cm from base to beak, lower margin oblique upward. Petals glabrous; limb 6–10 mm; lip 3–6 mm; spur incurved, 1.5–3 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous or ovary spreading pubescent. Follicles 1.5–1.7 cm. Seeds ca. 2.5 mm. Fl. Aug–Sep. $2n = 16^*$.

Grassy slopes, forests, forest margins; 200–1000 m. Heilongjiang, Jilin, Liaoning [Mongolia, Russia (Siberia)].

- 1a. Pedicels densely spreading yellowish pubescent; sepals abaxially spreading pubescent; ovary spreading pubescent 129a. var. *volubile*
- 1b. Pedicels and sepals abaxially retrorse and appressed pubescent; ovary glabrous 129b. var. *pubescens*

129a. *Aconitum volubile* var. *volubile*

蔓乌头(原变种) wan wu tou (yuan bian zhong)

Pedicels densely spreading yellowish pubescent. Sepals abaxially spreading pubescent. Ovary spreading pubescent.

Grassy slopes, forests; 200–1000 m. Heilongjiang, Jilin, Liaoning [Russia (Siberia)].

129b. *Aconitum volubile* var. *pubescens* Regel, Bull. Soc. Imp. Naturalistes Moscou 34: 91. 1861.

卷毛蔓乌头 juan mao wan wu tou

Aconitum ciliare de Candolle.

Pedicels and sepals abaxially retrorse and appressed pubescent. Ovary glabrous. $2n = 16^*$.

Forest margins. Heilongjiang, Liaoning [Korea, Russia (Far East)].

130. *Aconitum fischeri* Reichenbach, Monogr. Acon. t. 22. 1820.

薄叶乌头 bao ye wu tou

Caudex conical. Stem erect or apically slightly curved, 1–1.6 m tall, simple or apically branched, retrorse pubescent, or glabrous, with 12–18 leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, long petiolate; petiole 6.5–9 cm, retrorse pubescent; leaf blade subpentagonal, 8–12 × 12–15 cm, abaxially sparsely curved pubescent, adaxially becoming glabrous, 3-parted; central lobe rhombic, apex acuminate; lateral lobes unequally 2-parted. Inflorescence: terminal 4–6-flowered, axillary 2- or 3-flowered; rachis and pedicels slightly pubescent, glabrous or nearly so; bracts leaflike. Pedicels 1–3 cm, sparsely retrorse pubescent, sometimes glabrescent, with 2 bracteoles at middle; bracteole narrowly linear, 2.5–4 mm. Sepals purplish blue, abaxially glabrous or nearly so; lower sepals 8–11 mm; lateral sepals 1–2 cm; upper sepal high galeate, 1.4–2.5 cm high, shortly beaked, lower margin 1.2–2 cm. Petals glabrous; limb ca. 8 mm; lip ca. 4.5 mm, 2-lobed at apex; spur slightly circinate, ca. 2 mm. Stamens glabrous, rarely pubescent; filaments entire. Carpels 3, along ventral suture pubescent. Follicles ca. 1.4 cm, glabrous. Seeds ca. 2.5 mm. Fl. Aug.

Forests, grasslands, grassy slopes; 400–800 m. Heilongjiang, Jilin [Korea, Russia (Far East)].

- 1a. Stem retrorse pubescent; rachis and pedicels slightly pubescent; upper sepal 1.4–2 cm high, lower margin 1.2–1.7 cm; stamens rarely pubescent 130a. var. *fischeri*
- 1b. Stem glabrous; rachis and pedicels glabrous or nearly so; upper sepal 2.2–2.5 cm high, lower margin ca. 2 cm; stamens glabrous 130b. var. *arcuatum*

130a. *Aconitum fischeri* var. *fischeri*

薄叶乌头(原变种) bao ye wu tou (yuan bian zhong)

Stem retrorse pubescent. Rachis and pedicels slightly pubescent. Upper sepal 1.4–2 cm high, lower margin 1.2–1.7 cm. Stamens rarely pubescent.

Forests, grasslands; 400–800 m. N and W Heilongjiang [Russia (Far East)].

130b. *Aconitum fischeri* var. *arcuatum* (Maximowicz) Regel, Index Sem. Hort. Petrop. 44. 1861.

弯枝乌头 *wan zhi wu tou*

Aconitum arcuatum Maximowicz, Prim. Fl. Amur. 27. 1859; *A. fischeri* var. *arcuatum* f. *pilocarpum* S. H. Li & Y. H. Huang.

Stem glabrous. Rachis and pedicels glabrous or nearly so. Upper sepal 2.2–2.5 cm high, lower margin ca. 2 cm. Stamens glabrous. $2n = 16^*$.

Forests, grassy slopes. E Heilongjiang, Jilin [Korea, Russia (Far East)].

Alexander N. Luferov (pers. comm.) believes that this taxon is synonymous with *Aconitum sczukinii*.

131. *Aconitum raddeanum* Regel, Index Sem. Hort. Petrop. 43. 1861.

大苞乌头 *da bao wu tou*

Caudex unknown. Stem ca. 1 m tall, glabrous, apically long branched, with leaves equally arranged along stem. Middle cauline leaves shortly petiolate; petiole ca. 2 cm, glabrous; leaf blade pentagonal, ca. 8.5×10 cm, abaxially glabrous, adaxially sparsely appressed pubescent, 3-sect; central segment rhombic, apex acuminate, subpinnately parted; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence several flowered; rachis and pedicels glabrous; bracts leaflike. Proximal pedicels to 12.5 cm, distal ones 1–1.5 cm, glabrous, with 2 bracteoles below flower; bracteoles leaflike, $1-2 \times 1.4-2.6$ cm. Sepals purple-blue, abaxially glabrous; lower sepals 1.1–1.3 cm; lateral sepals ca. 1.4 cm; upper sepal high galeate, 2–2.5 cm high, shortly beaked, lower margin oblique upward, 1.5–1.6 cm. Petals glabrous; limb ca. 1.1 cm; lip ca. 3 mm, slightly concave; spur incurved, ca. 3.5 mm. Stamens glabrous; filaments entire. Carpels 3–5, densely brown pubescent. Fl. Jul.

Mountains. Heilongjiang (Yichun Shi), Jilin (Dunhua Xian) [Russia (Far East)].

132. *Aconitum fukutomei* Hayata, Icon. Pl. Formosan. 4: 1. 1914.

梨山乌头 *li shan wu tou*

Aconitum bartlettii Yamamoto; *A. bartlettii* var. *fukutomei* (Hayata) T. S. Liu & C. F. Hsieh.

Caudex fusiform, ca. 1.5 cm, ca. 5 mm in diam. Stem more than 50 cm, simple or branched, basally glabrous, apically spreading pubescent. Middle cauline leaves with petiole 0.8–2 cm, spreading pubescent; leaf blade pentagonal, $2-7 \times 3.5-9.5$ cm, abaxially pubescent, adaxially sparsely pubescent or glabrous, 3-sect; central segment rhombic, apex acuminate; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence corymbose, 3–9-flowered; rachis and pedicels spreading pubescent, bracts leaflike to linear. Pedicels ca. 2.5 cm, spreading pubescent, with 2 bracteoles at middle. Sepals blue-purple, both surfaces sparsely spreading pubescent; lower sepals 1.2–1.3 cm; lateral sepals 0.9–1.5 cm; upper sepal navicular, lower margin concave, 1.5–2.2 cm. Petals pubescent; limb ca. 0.9 cm;

spur incurved. Stamens glabrous; filaments 2-denticulate. Carpels 3, sparsely pubescent or becoming glabrous. Follicles ca. 1.2 cm. Fl. Oct. $2n = 32^*$.

• Mountains. Taiwan.

133. *Aconitum kojimae* Ohwi ex Tamura, Acta Phytotax. Geobot. 18: 64. 1959.

锐裂乌头 *rui lie wu tou*

Caudex obconical, 3–4.5 cm, 1.2–1.6 cm in diam. Stem 20–80 cm tall, simple, basally glabrous, apically sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 2–3 cm; leaf blade pentagonal, $3-9 \times 4-10$ cm, both surfaces appressed pubescent at veins, base cordate, 3-sect; central segment rhombic, apex acuminate; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence corymbose, 3–7-flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike. Pedicels 2–3 cm, with 2 bracteoles below middle; bracteoles linear, 2–6 mm, retrorse pubescent. Sepals abaxially pubescent; lower sepals 1–1.5 cm; lateral sepals 1.2–1.7 cm; upper sepal high galeate, 1.4–2.4 cm high, 1.3–1.9 cm from base to beak, lower margin slightly concave. Petals pubescent; limb 6.5–12 mm; spur incurved. Stamens pubescent; filaments 2-denticulate. Carpels 3, glabrous or sparsely pubescent. Follicles 0.7–1.1 cm. Fl. Aug.

• Mountains. S Taiwan.

1a. Stem simple; flower relatively small; upper sepal ca. 1.4 cm high 133a. var. *kojimae*

1b. Stem branched apically; flower relatively large; upper sepal 2.1–2.4 cm high 133b. var. *ramosum*

133a. *Aconitum kojimae* var. *kojimae*

锐裂乌头(原变种) *rui lie wu tou* (yuan bian zhong)

Stem simple. Flower relatively small. Upper sepal ca. 1.4 cm high.

• Mountains. S Taiwan.

133b. *Aconitum kojimae* var. *ramosum* Tamura, Acta Phytotax. Geobot. 18: 65. 1959.

分枝锐裂乌头 *fen zhi rui lie wu tou*

Stem branched apically. Flower relatively large. Upper sepal 2.1–2.4 cm high.

• S Taiwan.

134. *Aconitum formosanum* Tamura, Acta Phytotax. Geobot. 18: 64. 1959.

台湾乌头 *tai wan wu tou*

Aconitum bartlettii Yamamoto var. *formosanum* (Tamura) T. S. Liu & C. F. Hsieh; *A. fukutomei* Hayata

var. *formosanum* (Tamura) T. Y. A. Yang & T. C. Huang.

Caudex terete, ca. 3.5 cm, 8–10 mm in diam. Stem ca. 1 m, apically branched, sparsely spreading pubescent, or basally becoming glabrous. Proximal cauline leaves withered at anthesis, middle ones long petiolate or nearly so; petiole 2–4.5 cm; leaf blade pentagonal, 4–6.5 × 7–11 cm, abaxially spreading pubescent at veins, adaxially sparsely appressed pubescent, base cordate, 3-sect or nearly to base; central segment broadly rhombic or rhombic, apex acute, 3-parted; lateral segments unequally 2-parted. Inflorescence 3–5-flowered; rachis retrorse pubescent; basal bracts leaflike, others smaller. Pedicels spreading pubescent, 2.5–5 cm, with 2 bracteoles at middle; bracteoles linear-subulate, 6.5–7 mm. Sepals abaxially sparsely spreading pubescent; lower sepals oblong, ca. 1.3 cm; lateral sepals broadly obovate, 1.4–1.5 cm; upper sepal galeate, ca. 1.5 cm high, lower margin concave. Petals ca. 1.3 cm; claw sparsely pubescent; limb ca. 3.5 mm, sparsely pubescent; spur incurved, subglobose, ca. 1 mm. Stamens sparsely pubescent. Follicles ca. 2 cm. Seeds ca. 3.5 mm. Fl. Jul–Nov.

•Mountains. N Taiwan.

135. *Aconitum carmichaelii* Debeaux, Acta Soc. Linn. Bordeaux 33: 87. 1879.

乌头 wu tou

Caudex obconical, 2–4 cm, 1–1.6 cm in diam. Stem 0.6–1.5(–2) m, branched, apically sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 1–2.5 cm; leaf blade pentagonal, 6–11 × 9–15 cm, thinly leathery, papery, or herbaceous, abaxially sparsely pubescent or densely pubescent at veins, adaxially sparsely appressed pubescent, base slightly cordate, 3-sect or nearly to base; central segment broadly rhombic, sometimes obovate-rhombic or rhombic; lateral segments unequally 2-parted. Inflorescence terminal, 6–10(–25) cm, many flowered; rachis and pedicels ± densely retrorse and appressed pubescent, or spreading pubescent; proximal bracts 3-fid, others narrowly ovate to lanceolate. Pedicels 1.5–3(–5.5) cm, with 2 bracteoles at middle or below; bracteoles lanceolate to linear, 3–5(–10) × 0.5–0.8(–2) mm. Sepals blue-purple, abaxially pubescent; lower sepals 1.5–1.7 cm; lateral sepals 1.5–2 cm; upper sepal high galeate, 2–2.6 cm high, 1.7–2.2 cm from base to beak, lower margin slightly concave. Petals glabrous; limb ca. 1.1 cm; lip ca. 6 mm, slightly concave; spur usually circinate, (1–)2–2.5 mm. Stamens glabrous or sparsely pubescent; filaments 2-denticulate, or entire. Carpels 3–5, sparsely or densely pubescent, rarely glabrous. Follicles 1.5–1.8 cm. Seeds 3–3.2 mm. Fl. Sep–Oct. $2n = 32^*$, 48^* , 64^* .

Forest margins, scrub, grassy slopes, mountains; 100–2200 m. Anhui, Fujian, SE Gansu, N Guangdong, N Guangxi, Guizhou, Hebei, S Henan, W Hubei, Hunan, Jiangsu, Jiangxi, S Liaoning, Nei Mongol, S and SW Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [N Vietnam].

Further study is necessary to determine the placement of *Aconitum carmichaelii* var. *angustius* W. T. Wang & P. K. Hsiao (in W. T. Wang, Acta Bot. Yunnan. 15: 349. 1993).

- 1a. Rachis and pedicels spreading pubescent 135c. var. *truppelianum*
- 1b. Rachis and pedicels ± densely retrorse- and appressed pubescent.
 - 2a. Stem and abaxial leaf surfaces densely pubescent 135d. var. *pubescens*
 - 2b. Stem sparsely retrorse pubescent apically; leaves abaxially sparsely pubescent at veins.
 - 3a. Leaf blade palmately parted, central lobe acute at apex 135e. var. *tripartitum*
 - 3b. Leaf blade 3-sect, central segment acute, acuminate or long acuminate at apex.
 - 4a. Leaf blade papery or herbaceous, central segment acute at apex, lobules broad; rachis long ... 135a. var. *carmichaelii*
 - 4b. Leaf blade herbaceous, central segment acuminate or long acuminate at apex, lobules narrow; rachis short 135b. var. *hwangshanicum*

135a. *Aconitum carmichaelii* var. *carmichaelii*

乌头(原变种) wu tou (yuan bian zhong)

Aconitum bodinieri H. Léveillé & Vaniot; *A. kusnezoffii* Reichenbach var. *bodinieri* (H. Léveillé & Vaniot) Finet & Gagnepain; *A. lushanense* Migo.

Stem sparsely retrorse pubescent apically. Leaves herbaceous or papery, abaxially usually sparsely pubescent at veins, 3-sect; central segment acute, acuminate, or long acuminate at apex, lobules broad. Rachis long; rachis and pedicels ± densely retrorse and appressed pubescent.

Scrub, grassy slopes; 100–2200 m. Anhui, Fujian, N Guangdong, N Guangxi, Guizhou, Hebei, S Henan, W Hubei, Hunan, Jiangsu, Jiangxi, S Liaoning, Nei Mongol, S Shaanxi, E Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [N Vietnam].

135b. *Aconitum carmichaelii* var. *hwangshanicum* (W. T. Wang & P. K. Hsiao) W. T. Wang & P. K. Hsiao, Acta Pharm. Sin. 12: 685. 1965.

黄山乌头 huang shan wu tou

Aconitum chinense Siebold var. *hwangshanicum* W. T. Wang & P. K. Hsiao in B. J. Chen, Observ. Fl. Hwangshan. 113. 1965.

Stem sparsely retrorse pubescent apically. Leaves herbaceous, abaxially usually sparsely pubescent at veins, 3-sect; central segment acute, acuminate, or long acuminate at apex; lobules narrow. Rachis short; rachis and pedicels ± densely retrorse and appressed pubescent.

•Mountains; ca. 1000 m. S Anhui, NE Jiangxi, NW Zhejiang.

135c. *Aconitum carmichaelii* var. *truppelianum* (Ulbrich) W. T. Wang & P. K. Hsiao, Fl. Reipubl. Popularis Sin. 27: 268. 1979.

展毛乌头 zhan mao wu tou

Aconitum japonicum var. *truppelianum* Ulbrich, Beih. Bot. Centralbl. 37(2): 122. 1919; *A. carmichaelii* var. *fortunei* (Hemsley) W. T. Wang & P. K. Hsiao; *A. fortunei* Hemsley; *A. kitagawae* Nakai; *A. liaotungense* Nakai; *A. takahashii* Kitagawa; *A. truppelianum* (Ulbrich) Nakai.

Rachis and pedicels spreading pubescent.

•Forest margins, scrub, grassy slopes. Jiangsu, S Liaoning, Shandong, N Zhejiang.

135d. *Aconitum carmichaelii* var. *pubescens* W. T. Wang & P. K. Hsiao, Acta Pharm. Sin. 12: 685. 1965.

毛叶乌头 mao ye wu tou

Stem and leaves abaxially densely pubescent. Rachis and pedicels ± densely retrorse and appressed pubescent.

•Grassy slopes. SE Gansu, SW Shaanxi.

135e. *Aconitum carmichaelii* var. *tripartitum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 608. 1979.

深裂乌头 shen lie wu tou

Stem sparsely retrorse pubescent apically. Leaves abaxially usually sparsely pubescent at veins, palmately parted; central lobe acute at apex. Rachis and pedicels ± densely retrorse and appressed pubescent.

•Forests, scrub, grassy slopes. Jiangsu.

136. *Aconitum kusnezoffii* Reichenbach, Monogr. Acon. t. 21. 1820.

北乌头 bei wu tou

Caudex conical or carrot-shaped, 2.5–5 cm, 7–12 mm in diam. Stem (65–)80–150 cm, usually branched, glabrous, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones shortly to long petiolate; petiole 3–11 cm, glabrous; leaf blade pentagonal, 9–16 × 10–20 cm, papery or subleathery, abaxially glabrous, adaxially sparsely retrorse pubescent, base cordate, 3-sect; central segment rhombic, apex acuminate, subpinnately divided or lobed; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal, 9–22-flowered; rachis and pedicels glabrous; proximal bracts 3-fid, others oblong or linear. Proximal pedicels 1.8–3.5(–5) cm, with 2 bracteoles at middle or below; bracteoles linear or subulate-linear, 3.5–5 × ca. 1 mm. Sepals purple-blue, abaxially sparsely retrorse pubescent or nearly glabrous; lower sepals oblong, 1.2–1.4 cm; lateral sepals 1.4–1.6(–1.7) cm; upper sepal galeate or high galeate, 1.5–2.5 cm high, shortly or long beaked, lower margin ca. 1.8 cm. Petals glabrous; limb 3–4 mm wide; lip 3–5 mm; spur incurved or subcircinate, 1–4 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels (4 or)5, glabrous. Follicles erect, (0.8–)1.2–2 cm. Seeds ca. 2.5 mm. Jul–Sep. $2n = 32^*$.

Grassy slopes, grasslands, forests, forest margins, by streams; 2000–2400 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shanxi [Korea, Russia (Siberia)].

One of us (Kadota) indicates that plants with pubescent pedicels named *Aconitum kusnezoffii* var. *crispulum* W. T. Wang and *A. kusnezoffii* var. *pilosum* Y. Z. Zhao, nom. inval., are hybrid derivatives between *A. kusnezoffii* and other species. Those of var. *crispulum* have glabrous rachises and upper stems and apically retrorse pedicels, and occur in Hebei, Heilongjiang, Jilin, and Liaoning. Those of var. *pilosum* have appressed and retrorse pubescent or subglabrous rachises, upper stems, and pedicels, and occur in Nei Mongol.

1a. Segments narrow, subpinnately

divided 136a. var. *kusnezoffii*

1b. Segments broad, lobed 136b. var. *gibbiferum*

136a. *Aconitum kusnezoffii* var. *kusnezoffii*

北乌头(原变种) bei wu tou (yuan bian zhong)

Aconitum kusnezoffii lusum *dissectum* Regel; *A. pulcherrimum* Nakai; *A. pulcherrimum* var. *dissectum* (Regel) Nakai; *A. triphyloides* Nakai; *A. yamatsutae* Nakai.

Leaf segments narrow, subpinnately divided.

Grassy slopes, forests; 2000–2400 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shanxi [Korea, Russia (Far East, Siberia)].

136b. *Aconitum kusnezoffii* var. *gibbiferum* (Reichenbach) Regel, Index Sem. Hort. Petrop. 44. 1860.

宽裂北乌头 kuan lie bei wu tou

Aconitum gibbiferum Reichenbach, Monogr. Acon. t. 19. 1820.

Leaf segments broad, lobed.

•Liaoning.

137. *Aconitum wuchagouense* Y. Z. Zhao, Acta Phytotax. Sin. 23: 57. 1985.

五叉沟乌头 wu cha gou wu tou

Caudex obconical, ca. 7 cm, ca. 1 cm in diam. Stem 90–110 cm, sparsely appressed and retrorse pubescent. Proximal cauline leaves long petiolate, withered at anthesis, distal ones shortly petiolate; petiole 1–3 cm; leaf blade pentagonal, 6–10 × 7–12 cm, abaxially glabrous, adaxially retrorse pubescent, palmately 3-sect; central segment rhombic, apex acuminate, subpinnately parted; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal, many flowered; rachis and pedicels glabrous; proximal bracts leaflike, distal ones linear. Pedicels 1–3 cm, distally with 2 bracteoles; bracteoles linear, 5–7 mm. Sepals yellowish, abaxially pubescent; upper sepal oblong, ca. 1.4 × 0.5–0.8 cm. Petals glabrous, ca. 1.6 cm; limb 3–4 mm wide; lip ca. 6 mm, 2-lobed at apex; spur incurved, 1–2 mm. Stamens glabrous; filaments 1- or 2-denticulate. Carpels 5, glabrous. Fl. Aug.

•Forest margins; ca. 900 m. Nei Mongol (Hinggan Meng).

138. *Aconitum birobidshanicum* Voroschilov, Index Sem. Inst. Exp. Pl. Offic. URSS 31. 1943.

带领乌头 dai ling wu tou

Aconitum kusnezoffii Reichenbach subsp.

birobidshanicum (Voroschilov) Lufarov; *A. kusnezoffii* var. *birobidshanicum* (Voroschilov) S. X. Li; *A.*

pulcherrimum Nakai subsp. *birobidshanicum* (Voroschilov) Voroschilov.

Caudex conical, 2.5–4 cm, to 1 cm in diam. Stem 60–120 cm, branched, glabrous. Proximal cauline leaves long petiolate, withered at anthesis; petiole 2.5–5 cm, glabrous; leaf blade 5–10 × 5.5–12 cm, abaxially glabrous, adaxially sparsely retrorse pubescent, 3-sect; central segment rhombic, apex acuminate, pinnately divided; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence several flowered; rachis and pedicels glabrous; bracts leaflike. Pedicels 2–7.5 cm, with 2 bracteoles at middle or above; bracteoles narrowly obovate, spatulate, or linear, 3.5–5.5 × 1.5–3 mm. Sepals blue-purple, abaxially glabrous; lower sepals 0.6–1.1 cm; lateral sepals 0.9–1.5 cm; upper sepal high galeate, 1.4–2.4 cm high, 1–1.6 cm from base to beak, lower margin concave. Petals glabrous; limb 7–12 × 3–4 mm; lip 3.5–4 mm, slightly concave; spur slightly circinate, ca. 3 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Follicles ca. 1.6 cm. Seeds ca. 2 mm. Fl. Jul–Aug.

Grassy slopes, *Betula* forest margins. Heilongjiang [Mongolia, Russia (Far East)].

Alexander N. Luferov (pers. comm.) believes that this taxon is conspecific with *Aconitum kusnezoffii*.

139. *Aconitum bailangense* Y. Z. Zhao, Acta Phytotax. Sin. 23: 58. 1985.

白狼乌头 bai lang wu tou

Caudex conical. Stem erect, 80–150 cm tall, usually sparsely appressed and retrorse pubescent. Proximal cauline leaves withered at anthesis, and distal ones with petiole 1–7 cm; leaf blade pentagonal, 7–10 × 8–12 cm, abaxially glabrous, adaxially retrorse pubescent, palmately 3-sect; central segment rhombic, apex acuminate, pinnately parted; lateral segments obliquely flabellate, unequally 2-parted. Flower solitary; rachis and pedicels sparsely appressed and retrorse pubescent. Pedicel upward curved, 3–11 cm, distally with 2 bracteoles; bracteoles 0.8–1.5 cm. Sepals blue-purple, abaxially pubescent; lower sepals ovate-oblong, 1.2–1.7 cm; lateral sepals suborbicular, 1.3–1.8 × 1.3–1.8 cm; upper sepal high galeate, 1.5–2.2 cm high. Petals glabrous; limb 3–4 mm wide; lip ca. 4 mm, 2-lobed at apex; spur decurved, ca. 2 mm. Stamens glabrous; filaments entire or 1- or 2-denticulate. Carpels 5, glabrous. Fl. Jul–Aug.

• Grasslands. Nei Mongol (Hinggan Meng).

140. *Aconitum jaluense* Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 18: 439. 1901.

鸭绿乌头 ya lu wu tou

Caudex conical, ca. 3 cm. Stem 45–100 cm, glabrous, usually branched, with leaves equally arranged along

stem. Proximal cauline leaves withered at anthesis; middle ones with petiole 3–6 cm; leaf blade pentagonal, 7–12 × 8–16 cm, abaxially glabrous, adaxially rarely appressed pubescent, base cordate, 3-sect; central segment rhombic, apex acuminate, 3-fid; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal or axillary, several or many flowered; rachis and pedicels usually densely spreading pubescent. Lower sepals oblong; lateral sepals ca. 1.5 cm; upper sepal high galeate, ca. 2 cm high, ca. 1.6 cm from base to beak. Petals glabrous; limb ca. 1.2 cm; lip ca. 6 mm, apex slightly concave; spur incurved, 2–3 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3(or 4), glabrous or pubescent. Follicles ca. 2 cm. Seeds ca. 2.5 mm. Fl. Sep. $2n = 32^*$.

Forest margins, scrub; ca. 800 m. Heilongjiang, Jilin, SE Liaoning [Korea, Russia (Far East)].

- 1a. Leaf blade truncate at base, 3-parted 140b. var. *truncatum*
- 1b. Leaf blade cordate at base, 3-sect.
 - 2a. Pedicels densely spreading pubescent 140a. var. *jaluense*
 - 2b. Pedicels spreading pubescent only at apex 140c. var. *glabrescens*

140a. *Aconitum jaluense* var. *jaluense*

鸭绿乌头(原变种) ya lu wu tou (yuan bian zhong) *Aconitum triphyllum* Nakai var. *manshuricum* Nakai. Leaf blade cordate at base, 3-sect. Pedicels densely spreading pubescent.

Heilongjiang, Jilin [Korea, Russia (Far East)].

140b. *Aconitum jaluense* var. *truncatum* S. H. Li & Y. H. Huang, Fl. Pl. Herb. Chin. Bor.-Orient. 3: 228. 1975.

截基鸭绿乌头 jie ji ya lu wu tou

Leaf blade truncate at base, 3-parted.

• Scrub; ca. 800 m. Jilin.

140c. *Aconitum jaluense* var. *glabrescens* Nakai, Bot. Mag. (Tokyo) 43: 440. 1929.

光梗鸭绿乌头 guang geng ya lu wu tou

Aconitum manshuricum Nakai.

Leaf blade cordate at base, 3-sect. Pedicels spreading pubescent only at apex.

• Forest margins. SE Liaoning.

141. *Aconitum paniculigerum* Nakai, Bot. Mag. (Tokyo) 34: 41. 1920.

圆锥乌头 yuan zhui wu tou

Caudex obconical, 2–3 cm. Stem 70–100 cm, apically branched, glabrous. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole ca. 6 cm, glabrous; leaf blade cordate-pentagonal, 10–15 × 13–16 cm, abaxially glabrous, adaxially sparsely appressed pubescent, 3-sect; central segment rhombic, apex

acuminate, subpinnately parted; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence conical, many flowered; rachis and pedicels spreading pubescent; proximal bracts 3-fid, others linear. Pedicels 3–5.5 cm, with 2 bracteoles near middle; bracteoles narrowly linear, ca. 5 mm. Sepals purple-blue, abaxially sparsely pubescent; lower sepals oblong; lateral sepals broadly obovate; upper sepal high galeate, 1.6–1.8 cm high, lower margin erect or concave. Petals glabrous; lip ca. 4 mm, 2-lobed at apex; spur incurved, slightly circinate at apex, ca. 2.5 mm. Stamens glabrous; filaments entire. Carpels (3–)5, glabrous. Follicles ca. 1.1 cm. Seeds ca. 2 mm. Fl. Aug–Sep.

Forests, forest margins, grassy spoils; 600–1500 m. NE Hebei, E Jilin, SE Liaoning [Korea].

- 1a. Rachis and pedicels spreading pubescent 141a. var. *paniculigerum*
1b. Rachis glabrous, pedicels sparsely spreading pubescent distally 141b. var. *wulingense*

141a. *Aconitum paniculigerum* var. *paniculigerum*

圆锥乌头(原变种) yuan zhui wu tou (yuan bian zhong)
Aconitum jaluense Komarov var. *paniculigerum* (Nakai) S. X. Li; *A. paniculigerum* var. *leiocarpum* Nakai ex Kitagawa; *A. paniculigerum* var. *leiogynum* f. *glabrescens* Nakai; *A. subalpinum* A. I. Baranov. Rachis and pedicels spreading pubescent.

Forests, forest margins; 600–1200 m. E Jilin, SE Liaoning [Korea].

141b. *Aconitum paniculigerum* var. *wulingense* (Nakai) W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 273. 1979.

疏毛圆锥乌头 shu mao yuan zhui wu tou
Aconitum wulingense Nakai, Rep. Exped. Manchoukuo, Sect. 4, 2: 157. 1935; *A. kusnezoffii* Reichenbach var. *wulingense* (Nakai) W. T. Wang; *A. tokii* Nakai. Rachis glabrous, pedicels sparsely spreading pubescent distally.

• Grassy spoils, forests; 600–1500 m. NE Hebei.

142. *Aconitum dunhuaense* S. H. Li, Fl. Pl. Herb. Chin. Bor.-Orient. 3: 228. 1975.

敦化乌头 dun hua wu tou

Caudex unknown. Stem more than 80 cm, apically slightly S-curved, fork-branched, glabrous. Cauline leaves with petiole 2–5 cm; leaf blade suborbicular, 3–12 × 5–14 cm, abaxially glabrous, adaxially sparsely appressed pubescent at veins, 3-sect; central segment rhombic, 5–6 cm wide, subduplicato-pinnatifid, ultimate lobes narrowly triangular, 2–4 mm wide, apex acuminate; lateral segments obliquely flabellate, unequally 2-parted near base. Inflorescence many flowered. Pedicel 5–8.5 cm, proximally glabrous, distally spreading pubescent, proximally with 2 bracteoles; bracteoles narrowly spatulate-oblongate, 4–8 × 1–3 mm. Sepals blue-purple, abaxially sparsely pubescent; lower sepals ca. 1 cm; lateral sepals ca. 1.2 cm; upper sepal high galeate, ca. 2 cm, ca. 1.5 cm from base to beak. Petals glabrous; limb 3–4 mm wide; lip 2-lobed at apex; spur incurved, headlike. Stamens

glabrous; filaments entire. Carpels (4 or)5, sparsely pubescent. Fl. Aug.

• Grassy slopes. Jilin (Dunhua Xian).

143. *Aconitum fusungense* S. H. Li & Y. H. Huang, Fl. Pl. Herb. Chin. Bor.-Orient. 3: 228. 1975.

抚松乌头 fu song wu tou

Caudex unknown. Stem ca. 1 m, apically shortly branched, glabrous or sparsely appressed pubescent. Distal leaves shortly petiolate; petiole 0.5–3 cm; leaf blade orbicular-pentagonal, 4–9 × 4.5–11 cm, abaxially glabrous, adaxially appressed pubescent, 3-sect; central segment ovate-rhombic, apex long acuminate, pinnately lobed, lobules narrowly lanceolate to linear, 2–3 mm wide; lateral segments unequally 2-parted. Inflorescence terminal, ca. 11 cm, 7-flowered; rachis glabrous; bracts leaflike. Pedicels 3.5–8 cm, distally spreading pubescent, with 2 bracteoles below middle; bracteoles lanceolate to linear-lanceolate, 6–9 mm. Sepals purple-blue, abaxially sparsely pubescent; lower sepals ca. 1.4 cm; lateral sepals ca. 1.3 cm; upper sepal galeate, 1.5–2 cm high, clawed, 1–1.4 cm from base to beak, lower margin concave. Petals glabrous; limb ca. 4 mm; lip ca. 5 mm, 2-lobed at apex; spur incurved, ca. 1.5 mm. Stamens glabrous; filaments 2-denticulate or entire. Carpels 5, glabrous. Fl. Jul–Aug.

• Grassy slopes; ca. 900 m. Jilin (Fusong Xian).

144. *Aconitum ningwuense* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 608. 1979.

宁武乌头 ning wu wu tou

Caudex unknown. Stem purplish, ca. 75 cm, shortly 2-branched below inflorescence, glabrous. Middle cauline leaves slightly long petiolate; petiole ca. 4 cm, glabrous; leaf blade pentagonal, ca. 10 × 1.25 cm, papery, abaxially glabrous, adaxially sparsely appressed pubescent, 3-sect; central segment rhombic, apex acuminate, bipinnatifid nearly to midvein, ultimate lobes lanceolate-linear or linear, 2–3.5 mm wide; lateral segments shortly stipitate, obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, ca. 7 cm, ca. 8-flowered; rachis and pedicels 3–3.7 cm, proximally with 2 bracteoles; bracteoles narrowly linear, 4–5 mm. Sepals purple, adaxially glabrous; lower sepals narrowly elliptic, ca. 1.2 cm; lateral sepals orbicular-obovate, ca. 1.3 cm; upper sepal galeate, ca. 1.8 cm high, shortly clawed, ca. 1.3 cm from base to beak. Petals glabrous; limb ca. 1.1 cm; lip ca. 6 mm, slightly concave at apex; spur circinate, ca. 4.5 mm, apex globose. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Aug.

• By streams; ca. 1500 m. Shanxi (Ningwu Xian).

145. *Aconitum villosum* Reichenbach, Uebers. Gatt. Acon. 39. 1819.

白毛乌头 bai mao wu tou

Caudex to 3 cm, ca. 1 cm in diam. Stem erect or apically twining, ca. 90 cm, branched, spreading and retrorse pubescent, or sparsely villous. Proximal cauline

leaves withered at anthesis, middle ones slightly long petiolate; petiole ca. 4 cm; leaf blade pentagonal, ca. 7.5 × 10 cm, both surfaces appressed pubescent, base broadly cordate, 3-sect; central segment subrhombic, apex acuminate, bipinnatifid nearly to midvein; lobule linear or lanceolate-linear; lateral segments shortly stipitate, unequally 2-parted nearly to base. Inflorescence terminal on branches and stem, 2–7-flowered; rachis and pedicels densely retrorse pubescent; proximal bracts 3-fid, others linear-ovate. Pedicels 0.9–1.8 cm, with 2 bracteoles at middle; bracteoles linear, 2–3 mm. Sepals blue-purple, abaxially densely pubescent; lower sepals 0.8–1 cm; lateral sepals 1–1.3 cm; upper sepal high galeate, ca. 1.9 cm, lower margin slightly concave, 1–1.2 cm. Petals glabrous; limb 8–10 × 2.5–4 mm; lip 3–5 mm, slightly concave at apex; spur incurved, ca. 2 mm. Stamens glabrous; filaments entire. Carpels 5, sparsely pubescent distally. Fl. Sep. 2n = 16.

Forest margins, grasslands. E Jilin [Korea, Mongolia, Russia (Siberia)].

Alexander N. Luferov (pers. comm.) believes that the variability of this taxon lies within the range of that of *Aconitum volubile*.

- 1a. Stem erect or sometimes apically twining, spreading and retrorse pubescent 145a. var. *villosum*
- 1b. Stem all or apically twining, sparsely villous 145b. var. *amurense*

145a. *Aconitum villosum* var. *villosum*

白毛乌头(原变种) bai mao wu tou (yuan bian zhong)
Stem erect or sometimes apically twining, spreading and retrorse pubescent.

E Jilin [Korea, Mongolia, Russia (Siberia)].

145b. *Aconitum villosum* var. *amurense* (Nakai) S. H. Li & Y. H. Huang, Fl. Pl. Herb. Chin. Bor.-Orient. 3: 131. 1975.

缠绕白毛乌头 chan rao bai mao wu tou

Aconitum amurense Nakai, J. Jap. Bot. 18: 603. 1942.

Stem all or apically twining, sparsely villous.

Forest margins, grasslands. E Jilin [Korea].

146. *Aconitum daxinganlinense* Y. Z. Zhao, Acta Sci. Nat. Univ. Intramongol. 14(2): 223. 1983.

大兴安岭乌头 da xing an ling wu tou

Aconitum villosum Reichenbach var. *daxinganlinense* (Y. Z. Zhao) S. X. Li.

Caudex obconical, ca. 2 cm, ca. 5 mm in diam. Stem erect, 20–100 cm tall, simple or branched at apex, appressed and retrorse pubescent at base, sometimes subglabrous, apically appressed and retrorse pubescent or spreading villous, sometimes sparsely pubescent. Proximal cauline leaves long petiolate, withered at anthesis, distal ones shortly petiolate; petiole villous; leaf blade suborbicular, 2–7 × 3–9 cm, abaxially spreading villous, adaxially appressed and retrorse pubescent or intermixed spreading villous, palmately 3-sect; central segment rhombic, apex acuminate, ultimate lobes lanceolate or linear, 1–3 mm wide; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal or axillary, 1–5-flowered; rachis

appressed and retrorse pubescent, sometimes sparsely pubescent; proximal bracts leaflike, distal ones 3-fid. Pedicels 1–3 cm, densely spreading pubescent, sometimes sparsely pubescent, with 2 bracteoles at or above middle; bracteoles linear, 2–3 mm. Sepals purple-blue, sometimes becoming white, abaxially pubescent; lower sepals elliptic or elliptic-lanceolate, 1–1.2 cm × 3–7 mm; lateral sepals broadly obovate, ca. 1.5 cm; upper sepal high galeate, 1.5–2 cm, lower margin ca. 1.8 cm. Petals glabrous, 1.3–1.8 mm; limb 3–4 mm wide; lip ca. 3.5 mm, apex 2-lobed; spur decurved, ca. 2 mm, dentate. Stamens glabrous; filaments 2-denticulate. Carpels 3–5, glabrous or sparsely pubescent. Follicles ca. 7 mm. Seeds ca. 1.5 mm. Fl. Jul–Aug, fr. Aug.

• Forests, by streams. Nei Mongol.

147. *Aconitum macrorhynchum* Turczaninow ex Ledebour, Bull. Soc. Imp. Naturalistes Moscou 15: 83. 1842.

细叶乌头 xi ye wu tou

Aconitum macrorhynchum f. *tenuissimum* (Nakai & Kitagawa) S. H. Li & Y. H. Huang; *A. macrorhynchum* var. *octocarpum* P. K. Chang & B. Y. Wang; *A. macrorhynchum* var. *viviparum* P. K. Chang & B. Y. Wang; *A. tenuissimum* Nakai & Kitagawa.

Caudex carrot-shaped, 1.2–2.8 cm, 5–10 mm in diam. Stem 68–100 cm, basally nearly glabrous, apically sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, and middle ones slightly long petiolate; petiole 5–10 cm; leaf blade orbicular-ovate, 5.5–10 × 6–12 cm, 3-sect; central segment triangular-ovate, subpinnatisect; ultimate lobes linear, 1–3 mm wide. Inflorescence terminal on stem and branches, 5–15-flowered; proximal bracts leaflike, distal ones linear. Pedicel 1.5–2.5 cm, with 2 bracteoles proximally or distally; bracteoles linear, (1.5–)2.5–4 mm. Sepals purple-blue, abaxially sparsely pubescent; lower sepals 0.9–1.1 cm; lateral sepals orbicular-obovate, 1.1–1.4 cm; upper sepal high galeate, 1.5–1.9 cm high, lower margin 1.3–1.7 cm. Petaline claw sparsely pubescent; limb glabrous; lip ca. 4.5 mm, slightly concave; spur incurved, ca. 1 mm. Stamens sparsely pubescent; filaments entire or 2-denticulate. Carpels 5(–8), pubescent. Follicles 1–1.3 cm. Seeds ca. 2.8 mm. Fl. Aug–Sep. 2n = 16*.

Grasslands, slopes; 200–500 m. Heilongjiang, Jilin [Russia (Far East, E Siberia)].

148. *Aconitum tschangbaischanense* S. H. Li & Y. H. Huang, Fl. Pl. Herb. Chin. Bor.-Orient. 3: 229. 1975.

长白乌头 chang bai wu tou

Aconitum villosum Reichenbach subsp. *tschangbaischanense* (S. X. Li & Y. H. Huang) S. X. Li. Caudex obconical, 2.5–3.5 cm, 6–7 mm in diam. Stem 85–140 cm, basally glabrescent, apically sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 4–9 cm,

glabrous; leaf blade reniform-pentagonal, 7–10 × 10–12 cm, abaxially glabrous, adaxially pubescent at veins, base cordate, 3-sect; central segment rhombic, apex long acuminate, pinnately parted nearly to midvein, ultimate lobes linear-lanceolate or linear, 2–4 mm wide, usually entire; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal or axillary, 11–14.5 cm, 7–14-flowered; rachis retrorse pubescent; proximal bracts leaflike, distal ones linear. Pedicels 2–5.5 cm, densely spreading pubescent, with 2 bracteoles near middle or above; bracteoles linear, 5–10 × 0.5–1 mm. Sepals blue, abaxially sparsely pubescent; lower sepals ca. 0.9 cm; lateral sepals ca. 1 cm; upper sepal high galeate or galeate, 1.5–2 cm high, 1.1–1.5 cm from base to beak, lower margin slightly concave. Petals glabrous; limb ca. 1 cm × 3.5 mm; lip ca. 6 mm; spur incurved, ca. 1.5 mm. Stamens glabrous; filaments usually entire. Carpels 5, sparsely pubescent or glabrous distally.

• Grassy slopes, forest margins; 1000–1700 m. Jilin (Changbai Shan).
149. *Aconitum monanthum* Nakai, Bot. Mag. (Tokyo) 28: 58. 1914.

高山乌头 gao shan wu tou

Caudex carrot-shaped, 1.5–2.5 cm, ca. 4 mm in diam. Stem 14–30 cm, simple or several branched, glabrous. Basal leaves 1 or 2, long petiolate; petiole 5–20 cm, base shortly sheathed; leaf blade reniform-pentagonal, 2.5–3.5 × 4–6.5 cm, both surfaces glabrous, 3-sect; central segment rhombic or broadly rhombic, dissected, ultimate lobes lanceolate-linear or narrowly lanceolate, 1.5–2 mm wide; lateral segments obliquely flabellate, unequally 2-fid nearly to base; cauline leaves 2–4, similar to basal leaves but smaller. Flower solitary, terminal, or inflorescence corymbose, 1- or 2-flowered; rachis and pedicels glabrous; bracts leaflike. Pedicels to 5 cm, with 2 bracteoles near middle; bracteoles 3-fid or linear. Sepals purple, abaxially glabrous; lower sepals 0.9–1.3 cm; lateral sepals 1–1.4 cm; upper sepal high galeate, 1.1–1.5 cm high, beak 4–5 mm, lower margin 1.2–2 cm, slightly concave. Petals glabrous; limb ca. 1 cm; lip ca. 3.5 mm, 2-lobed at apex; spur incurved, ca. 1.5 mm. Stamens glabrous; filaments entire or distally 2-denticulate. Carpels 3, glabrous. Follicles ca. 1.8 cm. Seeds ca. 3 mm. Fl. Jul–Aug.

Grassy slopes; 1200–1600 m. Jilin (Changbai Shan) [N Korea].

150. *Aconitum incisofidum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 87. 1965.

缺刻乌头 que ke wu tou

Caudex carrot-shaped, ca. 6.5 cm, ca. 1.2 cm in diam. Stem 1–1.8 m, simple, apically sparsely curved pubescent, with 14 leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, and middle ones long petiolate; petiole 3–7.5 cm; leaf blade orbicular-pentagonal, 6–12 × 9–16 cm, abaxially nearly glabrous, adaxially appressed pubescent, 3-sect nearly to base; central segment rhombic or broadly rhombic, apex acuminate, nearly bipinnatifid; lobule

narrowly triangular or lanceolate; lateral segments obliquely flabellate, unequally 2- or 3-parted. Inflorescence terminal, to 38 cm, many flowered; rachis and pedicels densely retrorse pubescent; proximal bracts leaflike, distal ones narrowly linear. Pedicels 1–5 cm, with 2 bracteoles proximally or distally; bracteoles narrowly linear, 1.5–5 mm. Sepals violet-blue, abaxially glabrous or pubescent; lower sepals ca. 1.2 cm; lateral sepals ca. 1.4 cm; upper sepal oblique upward, concave. Petals glabrous; claw sometimes geniculate at apex; lip ca. 4.5 mm, slightly concave; spur incurved, ca. 2.5 mm. Stamens glabrous; filaments 2-denticulate or entire. Carpels 3, glabrous. Follicles ca. 1.1 cm. Seeds 1.5–2 mm. Fl. Aug–Sep.

• *Abies* forests; 3700–4000 m. SW Sichuan (Daocheng Xian), NW Yunnan (Zhongdian Xian).

151. *Aconitum piepunense* Handel-Mazzetti, Symb. Sin. 7: 290. 1931.

中甸乌头 zhong dian wu tou

Caudex obliquely conical, ca. 6 cm, ca. 1.2 cm in diam. Stem 1.1–1.8 m, branched or simple, basally glabrescent, apically retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, and middle ones slightly long petiolate; petiole 2–5 cm, sparsely retrorse pubescent; leaf blade pentagonal, ca. 6.8 × 10 cm, abaxially glabrous, adaxially sparsely appressed pubescent, base broadly cordate, 3-parted; central lobe rhombic; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence terminal, 38–70 cm, many flowered; rachis and pedicels densely spreading yellowish pubescent, intermixed retrorse pubescent; proximal bracts leaflike, distal ones linear. Pedicels 1.5–7 cm, with 2 bracteoles at middle or above; bracteoles narrowly linear, 3.5–7 mm. Sepals blue, abaxially glabrous; lower sepals 1.2–1.4 cm; lateral sepals 1.2–1.5 cm; upper sepal galeate or high galeate, 1.5–2 cm high, shortly beaked, ca. 1.6 cm from base to beak, lower margin slightly concave. Petals glabrous, or sparsely pubescent; lip ca. 4 mm; spur incurved, ca. 1.2 cm. Stamens glabrous, sparsely pubescent; filaments usually entire, sometimes 2-denticulate. Carpels 5, glabrous, or ovary sparsely pubescent. Follicles 1–1.5 cm. Seeds ca. 3 mm. Fl. Jul–Aug. $2n = 16^*, 32^*$.

• Grassy slopes; 3000–3300 m. NW Yunnan (Zhongdian Xian).

1a. Petals, stamens, and ovary glabrous

..... 151a. var. *piepunense*

1b. Petals, stamens, and ovary sparsely

pubescent 151b. var. *pilosum*

151a. *Aconitum piepunense* var. *piepunense*

中甸乌头(原变种) zhong dian wu tou (yuan bian zhong)

Petals, stamens, and ovary glabrous.

• Grassy slopes; 3000–3300 m. NW Yunnan (Zhongdian Xian).

151b. *Aconitum piepunense* var. *pilosum* H. F. Comber, Notes Roy. Bot. Gard. Edinburgh 18: 225. 1934.

疏毛中甸乌头 *shu mao zhong dian wu tou*

Petals, stamens, and ovary sparsely pubescent.

•NW Yunnan.

152. *Aconitum jiulongense* W. T. Wang, *Acta Bot. Yunnan.* 6: 371. 1984.

九龙乌头 *jiu long wu tou*

Caudex obconical or carrot-shaped, 3.5–4 cm, 0.9–1.4 cm in diam. Stem ca. 1 m, apically spreading pubescent. Distal leaves shortly petiolate; petiole ca. 1.2 cm; leaf blade cordate-pentagonal, ca. 7 × 7 cm, papery, abaxially pilose, adaxially appressed pubescent, 3-sect; central segment narrowly rhombic, apex long acuminate, pinnately lobed; lobes triangular, lateral segments unequally 2-parted. Inflorescence terminal, ca. 24 cm, 22-flowered; rachis and pedicels densely retrorse and appressed pubescent; proximal bracts leaflike, distal ones linear, ca. 8 mm. Pedicels 2–4 cm, with 2 bracteoles at middle or below; proximal bracteoles leaflike, 0.5–1.5 cm, others linear, 3–5 mm. Sepals blue-purple, abaxially appressed pubescent; lower sepals narrowly elliptic or linear-lanceolate; lateral sepals obliquely broadly obovate, ca. 1.6 × 1.5–1.7 cm, adaxially sparsely villous; upper sepal high galeate, 2–2.6 cm high, clawed, with a beak ca. 5 mm, lower margin 1.5–2 cm. Petaline lip ca. 6 mm, glabrous, 2-lobed at apex; spur curved, ca. 2.5 mm, pilose. Stamens glabrous; filaments entire. Carpels 3, densely appressed pubescent. Fl. Jul.

•By streams; ca. 2500 m. W Sichuan (Jiulong Xian).

153. *Aconitum ramulosum* W. T. Wang, *Fl. Reipubl. Popularis Sin.* 27: 608. 1979.

多枝乌头 *duo zhi wu tou*

Tuber carrot-shaped, ca. 4.5 cm, ca. 1 cm in diam. Stem ca. 1 m, from base to below inflorescence branched, branches 12–28 cm, basally glabrous, apically sparsely spreading and retrorse pubescent. Cauline leaves ca. 14, lowermost ones withered at anthesis, middle ones slightly long petiolate; petiole ca. 4.5 cm; leaf blade orbicular-pentagonal, ca. 6 × 7 cm, abaxially glabrous, adaxially sparsely pubescent at veins, 3-sect; central segment rhombic, subpinnatisect, ultimate lobes linear, ca. 2.5 mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, ca. 28 cm, ca. 10-flowered; rachis and pedicels densely retrorse and appressed pubescent. Proximal pedicels 6.5–11 cm, distal ones ca. 1.5 cm, distally with 2 bracteoles; bracteoles usually leaflike, 1–2.2 cm, distal ones narrowly linear. Sepals blue-purple, abaxially glabrous; lower sepals elliptic or narrowly oblong; lateral sepals obliquely broadly obovate; upper sepal high galeate, ca. 1.5 cm high, beaked, lower margin suberect. Petals glabrous; spur obliquely incurved, subglobose; lip slightly concave at apex. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Jul–Aug.

•NW Yunnan (Zhongdian Xian).

154. *Aconitum legendrei* Handel-Mazzetti, *Acta Horti Gothob.* 13: 112. 1939.

冕宁乌头 *mian ning wu tou*

Caudex obconical, ca. 3.5 cm, ca. 1.5 cm in diam. Stem 1–1.2 m, simple, basally glabrous, apically retrorse white pubescent. Proximal cauline leaves withered at anthesis, and middle ones with petiole ca. 2.5 cm; leaf blade broadly ovate or pentagonal, 7–9 × 8–11 cm, papery, both surfaces sparsely white pubescent, 3-sect; central segment rhombic or broadly rhombic, base narrowly cuneate, ultimate lobes narrowly ovate or lanceolate-linear, margin entire or 1-dentate, 2–3.5 mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence densely many flowered; rachis and pedicels densely spreading white pubescent; proximal bracts 3-fid, distal ones lanceolate. Pedicels 0.8–2 cm, distally with 2 bracteoles; bracteoles linear, ca. 5 mm. Sepals blue, abaxially ± densely pubescent; upper sepal galeate, 1.5–2 cm high, shortly beaked, ca. 1.4 cm from base to beak, external margin suberect. Petals sparsely pubescent; lip ca. 4 mm; spur slightly incurved, ca. 1 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3–5, glabrous. Follicles erect, 1.8–2.2 cm. Seeds ca. 2 mm. Fl. Sep.

•Grassy slopes; 2500–2800 m. SW Sichuan (Mianning Xian).

155. *Aconitum delavayi* Franchet, *Bull. Soc. Bot. France* 33: 381. 1886.

马耳山乌头 *ma er shan wu tou*

Caudex conical, ca. 2 cm. Stem 40–70(–90) cm, branched or simple, retrorse pubescent. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 4–14 cm; leaf blade orbicular-pentagonal, 4–6 × 5–7 cm, both surfaces sparsely pubescent, becoming glabrous, 3-sect; central segment rhombic, 2-sect; ultimate lobes linear, 1.8–3 mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, 4–11-flowered; rachis and pedicels densely spreading yellow pubescent and retrorse white pubescent; proximal bracts leaflike, others 3-fid or linear. Pedicels 2–5.5 cm, with 2 bracteoles near middle; bracteoles oblong to linear, 5–12 × 0.4–5 mm, sometimes bracteoles of lowermost pedicel 3-fid. Sepals blue-purple, adaxially yellow pubescent; lower sepals 1.2–1.5 cm; lateral sepals 1.5–2 cm; upper sepal high galeate, 1.7–2.4 cm high, shortly beaked, lower margin 1.5–2 cm. Petaline claw sparsely pubescent; lip 4–5 mm, slightly concave; spur decurved, ca. 4 mm. Stamens glabrous; filaments entire. Carpels 5, densely yellow pubescent. Fl. Aug–Oct.

•Alpine grasslands, forests; 3700–3800 m. NW Yunnan.

156. *Aconitum chienningense* W. T. Wang, *Fl. Reipubl. Popularis Sin.* 27: 609. 1979.

乾宁乌头 *qian ning wu tou*

Caudex narrowly obconical, ca. 5 cm. Stem 1–1.8 m, branched, retrorse pubescent, with leaves equally arranged along stem. Middle cauline leaves slightly long petiolate, petiole 3–5 cm; leaf blade orbicular-pentagonal, ca. 8 × 9 cm, abaxially pubescent at veins, adaxially sparsely retrorse pubescent, 3-sect; central segment rhombic, apex acuminate, pinnately parted, ultimate lobes narrowly lanceolate or lanceolate-linear; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, 5–8-flowered; rachis and pedicels densely retrorse and appressed pubescent or spreading pubescent; proximal bracts leaflike. Pedicels 1.2–2.5 cm, with 2 bracteoles at middle or above; bracteoles subulate, 4–10 mm, sometimes leaflike. Sepals blue-purple, abaxially sparsely pubescent or subglabrous; lower sepals oblong; lateral sepals orbicular-obovate, 1.3–1.6 cm; upper sepal high galeate, 1.6–2 cm high, shortly beaked, lower margin slightly concave, 1.4–1.8 cm. Petals ca. 1.8 cm; claw and lip sparsely pubescent; limb glabrous or sparsely pubescent, ca. 9 mm; lip ca. 5 mm, slightly concave at apex; spur incurved, ca. 2 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Aug. • *Quercus* scrub, mountains, by streams; 3000–3900 m. W Sichuan, SE Xizang.

- 1a. Rachis and pedicels densely retrorse and appressed pubescent; petaline limb glabrous 156a. var. *chienningense*
- 1b. Rachis and pedicels spreading pubescent; petaline limb sparsely pubescent 156b. var. *lasiocarpum*

156a. *Aconitum chienningense* var. *chienningense*
乾宁乌头(原变种) qian ning wu tou (yuan bian zhong)
Rachis and pedicels densely retrorse and appressed pubescent. Petaline limb glabrous.

• *Quercus* scrub, by streams; 3600–3900 m. W Sichuan (Changning Xian, Dawu Xian).

156b. *Aconitum chienningense* var. *lasiocarpum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 609. 1979.

毛果乾宁乌头 mao guo qian ning wu tou
Rachis and pedicels spreading pubescent. Petaline limb sparsely pubescent.

• Mountains; ca. 3000 m. SE Xizang (Mainling Xian).

157. *Aconitum potaninii* Komarov, Repert. Spec. Nov. Regni Veg. 13: 234. 1914.

密花乌头 mi hua wu tou
Caudex unknown. Stem 1.5–2 m, branched, sparsely pubescent. Middle cauline leaves slightly long petiolate; petiole ca. 6 cm; leaf blade orbicular-pentagonal, ca. 10 × 14 cm, both surfaces appressed pubescent, 3-sect; central segment rhombic, apex acuminate, subpinnately parted, lobules narrowly triangular to linear; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence ca. 20 cm, densely many flowered; rachis and pedicels spreading pubescent and intermixed glandular pubescent; proximal bracts

leaflike, distal ones linear. Pedicels 1.5–5 cm, with 2 bracteoles at middle or above; bracteoles linear. Sepals white or blue-purple, abaxially glabrous; lower sepals ca. 1.2 cm; lateral sepals ca. 1.4 cm; upper sepal galeate, distinctly clawed, ca. 1.7 cm high, sharply beaked, ca. 1.6 cm from base to beak, lower margin oblique upward, concave. Petals pubescent; lip ca. 5 mm, slightly concave; spur incurved, ca. 1.5 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3, glabrous. Fl. Aug–Sep.

• *Abies* forest margins; ca. 3700 m. W Sichuan.

158. *Aconitum dolichostachyum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 609. 1979.

长序乌头 chang xu wu tou
Caudex unknown. Stem ca. 1 m, apically shortly branched, glabrous. Middle cauline leaves long petiolate; petiole ca. 7 cm, glabrous or nearly so; leaf blade cordate-pentagonal, ca. 7.5 × 10 cm, abaxially glabrous, adaxially sparsely appressed pubescent at veins, 3-sect; central segment rhombic-ovate, apex long acuminate, subpinnately parted, ultimate lobes narrowly triangular to linear-lanceolate; lateral segments obliquely flabellate, unequally 2-parted nearly to base.

Inflorescence: compound ones ca. 70 cm, many flowered; terminal one 35–36 cm, 30–58-flowered; rachis and pedicels glabrous; proximal bracts leaflike, distal ones 3-fid or linear. Pedicels 1.8–6 cm, with 2 bracteoles near middle; bracteoles 5–8 mm, glabrous, rarely leaflike. Sepals purplish, abaxially glabrous, adaxially sparsely villous; lower sepals narrowly oblong, 1.1–1.3 cm × 2–4 mm; lateral sepals obliquely broadly obovate, ca. 1.2 cm; upper sepal high galeate, ca. 1.8 cm high, shortly clawed, shortly beaked, ca. 1.5 cm from base to beak, lower margin slightly concave. Petals glabrous or nearly glabrous; claw geniculate at apex; limb ca. 9 mm; lip ca. 3.5 mm, slightly concave at apex; spur incurved, ca. 2 mm. Stamens glabrous; filaments entire. Carpels 3(or 4), glabrous. Fl. Aug.

• Alpine meadows; ca. 3500 m. E Xizang (Gongbo'gyamda Xian).

159. *Aconitum ambiguum* Reichenbach, Monogr. Acon. t. 23. 1819.

兴安乌头 xing an wu tou
Aconitum ambiguum f. *multisectum* S. H. Li & Y. H. Huang.

Caudex unknown. Stem (28–)50–100 cm, simple or 1- or 2-branched below inflorescence, glabrous, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, and middle ones long petiolate; petiole 4–8 cm, glabrous; leaf blade orbicular-pentagonal, 4.6–7 × 6–12.5 cm, both surfaces glabrous, 3-sect; central segment rhombic, base narrowly cuneate, apex shortly acuminate, dissected nearly to midvein, ultimate lobes lanceolate to linear, 2–4 mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence (1–)3–5-flowered; rachis and pedicels glabrous; proximal bracts leaflike,

distal ones 3-fid or linear. Pedicels 1–8.5 cm, distally with 2 bracteoles; bracteoles linear, 2.5–6.5 × 0.3–1 mm. Sepals purple-blue, abaxially glabrous; lower sepals 5–9 mm; lateral sepals 0.9–1.1 cm; upper sepal galeate, 1.3–1.5 cm high, shortly beaked, lower margin ca. 1.5 cm. Petals glabrous; limb ca. 7 mm; lip ca. 5 × 1 mm; spur short, ca. 1 mm. Stamens glabrous; filaments 2-denticulate. Carpels 3–5, glabrous. Fl. Aug. $2n = 32^*$. Forests, forest margins; 400–500 m. Heilongjiang [Mongolia, Russia (Far East, Siberia)].

160. *Aconitum kongboense* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 17. 1963.

工布乌头 *gong bu wu tou*

Caudex subterete, ca. 8 cm, ca. 1.5 cm in diam. Stem erect, to 1.8 m, simple or branched, apically and inflorescence densely retrorse pubescent, or spreading pubescent. Leaves long petiolate; petiole 2–15 cm; leaf blade cordate-ovate, or ± pentagonal, ca. 15 × 15 cm, both surfaces glabrous or sparsely pubescent at veins, 3-sect; central segment rhombic, base narrowly cuneate, subpinnately parted from middle to apex, lobes linear-lanceolate or lanceolate; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Distal inflorescence to 60 cm, many flowered; proximal bracts leaflike, others lanceolate or subulate. Pedicels 1–10 cm, with 2 bracteoles at middle or above; proximal bracteoles leaflike, distal ones linear. Sepals white-purple or purplish, abaxially pubescent or glabrous; lower sepals 1.3–1.5 cm; lateral sepals 1.5 cm; upper sepal galeate or navicular, sometimes navicular-galeate, shortly clawed, 1.5–2 cm, with a triangular ca. 5 mm beak, 1.5–2 cm from base to beak, lower margin concave. Petals sparsely pubescent; limb ca. 8 mm; lip ca. 3.5 mm, apex slightly concave; spur incurved, ca. 2 mm. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3–11, glabrous or sparsely white pubescent. Fl. Jul–Aug.

• Scrub, grasslands, mountains; 3000–4000 m. W Sichuan, Xizang, NW Yunnan.

1a. Stem and inflorescence spreading pubescent 160b. var. *villosum*

1b. Stem and inflorescence densely retrorse pubescent.

2a. Upper sepal galeate, sometimes navicular-galeate, abaxially sparsely pubescent; filaments entire; carpels 3 or 4 160a. var. *kongboense*

2b. Upper sepal navicular, abaxially glabrous; filaments entire or 2-denticulate; carpels 6–11 160c. var. *polycarpum*

160a. *Aconitum kongboense* var. *kongboense*

工布乌头(原变种) *gong bu wu tou* (yuan bian zhong)

Aconitum lhasaense Lauener; *A. tsangpoense* Lauener; *A. viridiflorum* Lauener.

Stem and inflorescence densely retrorse pubescent. Upper sepal galeate, sometimes navicular-galeate, abaxially sparsely pubescent. Filaments entire. Carpels 3 or 4.

• Scrub, grasslands; 3000–3700 m. W Sichuan, Xizang.

160b. *Aconitum kongboense* var. *villosum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 609. 1979.

展毛工布乌头 *zhan mao gong bu wu tou*

Aconitum rongchuense Lauener.

Stem and inflorescence spreading pubescent.

• Mountains; ca. 4000 m. W Sichuan, E Xizang.

160c. *Aconitum kongboense* var. *polycarpum* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 33. 1987.

多果工布乌头 *duo guo gong bu wu tou*

Stem and inflorescence densely retrorse pubescent. Upper sepal navicular, abaxially glabrous. Filaments entire or 2-denticulate. Carpels 6–11.

• NW Yunnan (Zhongdian Xian).

161. *Aconitum abietetorum* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 32. 1987.

冷杉林乌头 *leng shan lin wu tou*

Caudex unknown. Stem branched, middle part sparsely spreading pubescent, apically retrorse and appressed pubescent. Middle cauline leaves long petiolate; petiole ca. 5 cm, sparsely spreading pubescent; leaf blade ca. 8 × 10 cm, papery, abaxially subglabrous, adaxially appressed pubescent, base cordate, 3-sect; central segment rhombic, pinnately parted, ultimate lobes linear or ovate; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal on stem and branches, 20–30 cm, many flowered; rachis and pedicels spreading or appressed pubescent; bracts leaflike. Pedicels 1.5–4.5 cm, with 2 bracteoles above base; proximal bracteoles leaflike, distal ones linear. Sepals deep blue, abaxially glabrous; lower sepals long elliptic or linear, ca. 1 cm × 2.5–4 mm; lateral sepals obliquely broadly obovate, ca. 1.5 × 1.2 cm; upper sepal galeate, 1.3–1.7 cm high, shortly clawed, shortly beaked, 1.4–1.7 cm from base to beak. Petals ca. 1.7 cm, glabrous; claw ca. 1.4 cm, apex slightly geniculate; limb ca. 8 mm; lip ca. 3 mm, apex 2-lobed; spur incurved, ca. 2 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Sep.

• *Abies* forest margins; ca. 3800 m. SW Sichuan (Muli Zang Zu Zizhixian).

162. *Aconitum pseudokongboense* W. T. Wang & L. Q. Li, Acta Bot. Yunnan. 8: 260. 1986.

拟工布乌头 *ni gong bu wu tou*

Caudex carrot-shaped, ca. 7.5 cm, ca. 1.3 cm in diam. Stem ca. 1 m, branched, apically retrorse pubescent. Cauline leaves long or shortly petiolate; petiole 1–9 cm,

glabrous or subglabrous; leaf blade pentagonal, 5–8 × 5–9 cm, leathery, both surfaces glabrous, abaxially veins convex, adaxially veins concave, base cordate, 3-sect; central segment rhombic, apex acuminate, pinnately parted, ultimate lobes linear or lanceolate; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence ca. 40 cm, many flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike, distal ones broadly linear or linear. Pedicels 1–3 cm, with 2 bracteoles at middle or below, or at base; bracteoles linear, 1–3 mm. Sepal blue, abaxially subglabrous; lower sepals suboblong, ca. 8 mm; lateral sepals obliquely broadly obovate, ca. 1.4 × 1 cm; upper sepal galeate, ca. 1.2 cm high, ca. 1.7 cm from base to beak, beak upward curved, ca. 2.5 cm. Petals ca. 2.5 cm, glabrous; claw ca. 1.9 cm; limb ca. 7 mm; lip ca. 3 mm, 2-lobed at apex; spur curved, ca. 4 mm. Stamens pilose; filaments 2-denticulate or entire. Carpels 3 or 4, pilose. Follicles ca. 1.1 cm. Fl. Sep–Oct.

• Forests; ca. 3500 m. Xizang (Gongbo'gyamda Xian).

163. *Aconitum polyanthum* (Finet & Gagnepain) Handel-Mazzetti, Acta Horti Gothob. 13: 99. 1939.

独花乌头 du hua wu tou

Caudex carrot-shaped, to 10 cm, ca. 1 cm in diam. Stem to 2 m, nearly glabrous, many branched; branches sparsely retrorse pubescent. Middle cauline leaves slightly long petiolate; petiole 4–7 cm, sparsely pubescent or nearly glabrous, leaf blade pentagonal, ca. 9 × 9 cm, abaxially sparsely pubescent at veins, adaxially sparsely appressed pubescent, 3-sect; central segment rhombic, apex long acuminate, bipinnately parted nearly to midvein; lobules lanceolate-linear, 1.5–2.8 mm; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, to 60 cm, ca. 55-flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike, distal ones lanceolate-linear. Pedicels 1–7 cm, with 2 bracteoles above middle; proximal bracteoles leaflike, distal ones linear to subulate, 4.5–10 mm. Sepals blue, abaxially glabrous or curved pubescent; lateral sepals ca. 9 mm; upper sepal navicular-galeate, ca. 1.4 cm high, shortly beaked, ca. 1 cm from base to beak, lower margin oblique upward; lower sepals ca. 0.8 mm. Petals glabrous, claw sparsely pubescent; limb ca. 6 × 2 mm; lip ca. 3 mm, slightly concave at apex; spur subglobose, ca. 1 mm in diam. Stamens glabrous; filaments entire. Carpels 4, glabrous. Fl. Jul.

• Scrub, mountains, by streams; 3500–4000 m. W Sichuan, E Xizang (Dèngqèn Xian).

1a. Sepals abaxially glabrous; petaline claw glabrous 163a. var. *polyanthum*

1b. Sepals abaxially curved pubescent; petaline claw sparsely pubescent 163b. var. *puberulum*

163a. *Aconitum polyanthum* var. *polyanthum*

多花乌头(原变种) duo hua wu tou (yuan bian zhong)

Aconitum napellus Linnaeus var. *polyanthum* Finet & Gagnepain, Bull. Soc. Bot. France 51: 513. 1904.

Sepals glabrous abaxially. Petaline claw glabrous.

• Scrub, by streams; ca. 3500 m. W Sichuan.

163b. *Aconitum polyanthum* var. *puberulum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 89. 1965.

毛萼多花乌头 mao e duo hua wu tou

Sepals curved pubescent abaxially. Petaline claw sparsely pubescent.

• Mountains; ca. 4000 m. E Xizang (Dèngqèn Xian).

164. *Aconitum leiostachyum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 609. 1979.

光序乌头 guang xu wu tou

Caudex carrot-shaped, ca. 4.5 cm, ca. 6 mm in diam.

Stem 80–100 cm, glabrous, with leaves equally arranged along stem. Basal and most proximal cauline leaves withered at anthesis, other proximal cauline

leaves long petiolate; petiole ca. 9 cm, sparsely spreading pubescent, shortly sheathed; leaf blade pentagonal, ca. 5 × 6 cm, both surfaces sparsely pubescent, base cordate, 3-parted nearly to base; central lobe rhombic or ovate-rhombic, apex acuminate, subpinnately parted, ultimate lobes narrowly ovate or linear-lanceolate, 2–2.8 mm wide; lateral lobes obliquely flabellate, unequally 2-parted. Inflorescence ca. 35 cm, ca. 40-flowered; rachis and pedicels glabrous; distal bracts linear, others leaflike. Pedicels 1.5–6.5 cm, proximally with 2 bracteoles, glabrous; proximal bracteoles 3-fid, rhombic or cuneate, 0.8–1.5 cm, distal ones unlobed, linear, 3.5–7 mm, Sepals purple, abaxially glabrous; lower sepals ca. 1 cm; lateral sepals ca. 1.2 × 1.2 cm; upper sepal galeate, 1.2–1.4 cm high, ca. 7 mm wide, shortly beaked, 1.2–1.5 mm from base to beak, lower margin slightly concave. Petals glabrous; claw geniculate at apex; limb ca. 7 × 2.2 mm; lip ca. 3.5 mm, entire; spur obliquely incurved, subglobose, ca. 1 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Jul.

• Mountains; ca. 2700 m. NC Sichuan (Li Xian).

165. *Aconitum pseudogeniculatum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 610. 1979.

拟膝瓣乌头 ni xi ban wu tou

Caudex carrot-shaped, ca. 8 cm. Stem ca. 80 cm, apically shortly branched, basally spreading and apically appressed pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 4.5–6 cm, proximally pubescent; leaf blade reniform-pentagonal, 4–4.8 × 5.2–6.8 cm, herbaceous, abaxially glabrous, adaxially sparsely appressed pubescent, 3-sect or -parted nearly to 1 mm from base; central segment rhombic, pinnately parted nearly to midvein; lateral segments obliquely flabellate, unequally 2- or 3-parted. Inflorescence terminal, ca. 7 cm, 4–6-flowered; rachis and pedicels glabrous, or appressed pubescent; proximal bracts leaflike, others linear. Pedicels to 5.5

cm, with 2 bracteoles at middle or below; bracteoles narrowly linear, 3–5 mm, glabrous. Sepals blue-purple; lateral sepals obliquely broadly obovate, abaxially glabrous or appressed pubescent, adaxially sericeous-pubescent; upper sepal galeate, glabrous. Petaline claw and lip rarely pubescent, other parts glabrous; spur incurved, ca. 5 mm, subcylindric; claw geniculate at apex. Stamens glabrous; filaments entire or 2-denticulate. Carpels 3, glabrous.

• Slopes; 2700–3500 m. W Sichuan.

- 1a. Rachis, pedicels, and sepals abaxially glabrous 165a. var. *pseudogeniculatum*
- 1b. Rachis, pedicels, and sepals abaxially appressed pubescent 165b. var. *pubipes*

165a. *Aconitum pseudogeniculatum* var. *pseudogeniculatum*

拟膝瓣乌头(原变种) ni xi ban wu tou (yuan bian zhong)

Rachis, pedicels, and sepals abaxially glabrous.

• W Sichuan (Tanba Xian).

165b. *Aconitum pseudogeniculatum* var. *pubipes* W. T. Wang, Acta Bot. Yunnan. 6: 372. 1984.

黄毛梗乌头 huang mao geng wu tou

Rachis, pedicels, and sepals abaxially appressed pubescent.

• Slopes; 2700–3500 m. W Sichuan (Meigu Xian).

166. *Aconitum richardsonianum* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 3. 1963.

直序乌头 zhi xu wu tou

Caudex terete, to 10 cm, ca. 1 cm in diam. Stem 70–120 cm, basally glabrous, apically retrorse pubescent. Middle cauline leaves long petiolate; petiole 4–9 cm, glabrous; leaf blade orbicular-pentagonal, 5–10 × 5–10 cm; central segment rhombic-obovate, 3-fid ± to middle, ultimate lobes narrowly ovate to narrowly linear-lanceolate; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence to 60 cm, many flowered, most proximal branches to 15 cm, several flowered; rachis and pedicels densely spreading yellow glandular pubescent and very sparsely white pubescent, or retrorse or ± spreading white pubescent; proximal bracts leaflike, distal ones linear. Pedicels 0.3–3 cm, with 2 bracteoles near middle; bracteoles linear, 3–5 mm. Sepals blue-purple, abaxially yellow glandular pubescent, or retrorse or ± spreading white pubescent; lower sepals ca. 0.8 cm; lateral sepals ca. 1.4 cm; upper sepal navicular or navicular-galeate, 1.6–1.8 cm high, shortly beaked, 1.5–2 cm from base to beak, adaxially glabrous, lower margin slightly concave. Petals glabrous; claw slender; spur subglobose, ca. 1.5 mm; lip ca. 4 mm, slightly concave at apex. Stamens glabrous; filaments 2-denticulate or entire. Carpels 5, densely pubescent. Fl. Aug–Sep.

• *Betula* forests, scrub, grassy slopes, by streams; 3100–4700 m. E Xizang.

- 1a. Rachis, pedicels, and sepals adaxially densely spreading yellow glandular pubescent and very sparsely white pubescent 166a. var. *richardsonianum*
- 1b. Rachis, pedicels, and sepals adaxially retrorse or ± spreading white pubescent, not yellow glandular pubescent 166b. var. *pseudosessiliflorum*

166a. *Aconitum richardsonianum* var. *richardsonianum*

直序乌头(原变种) zhi xu wu tou (yuan bian zhong)

Rachis, pedicels, and sepals adaxially densely spreading yellow glandular pubescent and very sparsely white pubescent.

• *Betula* forests, grassy slopes; 3100–4600 m. E Xizang.

166b. *Aconitum richardsonianum* var. *pseudosessiliflorum* (Lauener) W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 293. 1979.

伏毛直序乌头 fu mao zhi xu wu tou

Aconitum pseudosessiliflorum Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 4. 1963.

Rachis, pedicels, and sepals adaxially retrorse or ± spreading white pubescent, not yellow glandular pubescent.

• Scrub, grassy slopes, by streams; 4000–4700 m. E Xizang.

167. *Aconitum gammiei* Stapf, Bull. Misc. Inform. Kew 1907: 56. 1907.

错那乌头 cuo na wu tou

Aconitum huizenense T. L. Ming; *A. nakaoui* Lauener; *A. parabrachypodium* Lauener.

Caudex unknown. Stem 75–100 cm tall, branched, basally retrorse pubescent, apically glabrous. Middle cauline leaves long petiolate; petiole to 6 cm; leaf blade subpentagonal, to 9 × 10 cm, both surfaces subglabrous, base cordate, 3-sect; central segment rhombic, pinnately parted to midvein, ultimate lobes narrowly triangular to linear; lateral ones obliquely flabellate, 3-sect. Inflorescence terminal, 6–9 cm, 3–5-flowered; rachis and pedicels glabrous; bracts leaflike. Pedicels 1.5–7.5 cm, with 2 bracteoles proximally or distally; bracteoles leaflike or lanceolate. Sepals blue-purple, glabrous abaxially; lower sepals elliptic; lateral sepals obliquely orbicular-obovate, 1.2–2 cm; upper sepal navicular-galeate, 1.8–2 cm high, 1.2–1.8 cm from base to beak, lower margin concave. Petals ca. 2.4 cm; limb ca. 1 cm, sparsely pubescent; lip ca. 5.5 mm. Stamens sparsely pubescent; filaments entire or 2-denticulate. Carpels 5, glabrous. Fl. Sep.

Scrub in valleys; ca. 3800 m. Xizang (Cona Xian), NE Yunnan (Huize Xian) [Bhutan, Sikkim].

Yang Qiner (pers. comm.) believes that *Aconitum huizenense* is a synonym of *A. brachypodium*.

168. *Aconitum ouvardianum* Handel-Mazzetti, Symb. Sin. 7: 285. 1931.

德钦乌头 *de qin wu tou*

Caudex carrot-shaped or terete, 4–10 cm. Stem 40–100 cm, simple or shortly branched, or tenuibranching at middle, spreading yellowish pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 2.3–4 cm, sparsely spreading pubescent; leaf blade orbicular-pentagonal, 4.7–7 × 7–10 cm, abaxially becoming glabrous, adaxially sparsely appressed pubescent, 3-sect or -parted to base 1.5–2.5(–6) mm; central segment rhombic, apex acuminate, subpinnately parted, ultimate lobes linear or lanceolate-linear, 2–3 mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, 15–20-flowered, 10–35 cm; rachis and pedicels densely spreading yellowish pubescent; proximal bracts leaflike, distal ones linear. Pedicels 2–9 cm, with 2 bracteoles at middle or above; bracteoles filamentous or narrowly linear, 2.5–4 mm. Sepals blue-purple; lower sepals ca. 1.2 cm; lateral sepals ca. 1.4 cm; upper sepal galeate or navicular-galeate, abaxially glabrous, 1.6–2.3 cm from base to beak. Petals glabrous, or claw sparsely pubescent; lip ca. 3 mm; spur incurved, ca. 1.5 mm. Stamens glabrous; filaments entire. Carpels (3–) 5, sparsely spreading pubescent. Fl. Jul–Aug.

• Grassy slopes, forests; 3000–4000 m. SE Xizang (Zayü Xian), NW Yunnan.

- 1a. Stem 80–100 cm tall, simple or shortly branched; inflorescence 25–35 cm; petaline claw glabrous 168a. var. *ouvardianum*
1b. Stem ca. 40 cm tall, tenuibranching; inflorescence ca. 10 cm; petaline claw sparsely pubescent 168b. var. *pilopes*

168a. *Aconitum ouvardianum* var. *ouvardianum*

德钦乌头(原变种) *de qin wu tou (yuan bian zhong)*

Stem 80–100 cm tall, simple or shortly branched. Inflorescence 25–35 cm. Petaline claw glabrous.

• Grassy slopes; 3000–4000 m. SE Xizang (Zayü Xian), NW Yunnan.

168b. *Aconitum ouvardianum* var. *pilopes* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 32. 1987.

毛爪德钦乌头 *mao zhua de qin wu tou*

Stem ca. 40 cm tall, tenuibranching. Inflorescence ca. 10 cm. Petaline claw sparsely pubescent.

• Forests; ca. 3900 m. NW Yunnan (Zhongdian Xian).

169. *Aconitum pilopetalum* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25 (1): 30. 1987.

毛瓣乌头 *mao ban wu tou*

Caudex unknown. Stem ca. 40 cm, branched above base, spreading pubescent. Proximal cauline leaves withered at anthesis, and middle ones with petiole ca. 3 cm; leaf blade pentagonal, ca. 5 × 8 cm, papery, abaxially sparsely pubescent at veins, adaxially sparsely

pubescent, base cordate, 3-sect; central segment broadly rhombic, apex acuminate, subpinnately parted, ultimate lobes linear or narrowly ovate; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, ca. 10 cm, many flowered; rachis and pedicels densely spreading pubescent; proximal bracts leaflike, distal ones lanceolate-linear. Pedicels 2–20 mm, with 2 bracteoles at middle; bracteoles linear, ca. 6 mm, pubescent. Sepals broadly obovate, ca. 1.1 × 1.1 cm; lower sepals obliquely elliptic or oblong, ca. 1 × 0.3–0.5 cm. Petals ca. 1.3 cm; claw ca. 1 cm, upper part pubescent; limb ca. 6 mm; lip ca. 2.5 mm, sparsely pubescent at margin, 2-lobed at apex; spur ca. 1 mm. Stamens glabrous; filaments entire. Carpels 5, glabrous. Fl. Aug.

• Scrub; ca. 4200 m. W Sichuan (Yajiang Xian).

170. *Aconitum gezaense* W. T. Wang & L. Q. Li, Acta Phytotax. Sin. 25: 31. 1987.

格咱乌头 *ge zan wu tou*

Caudex unknown. Stem ca. 32 cm, slenderly branched from middle to below inflorescence, branches 10–20 cm, nearly glabrous or sparsely appressed pubescent. Proximal cauline leaves withered at anthesis, middle leaves long petiolate; petiole 2.5–3.5 cm, pubescent; leaf blade pentagonal, 2.5–3 × 3–4 cm, papery, abaxially sparsely pubescent, adaxially appressed pubescent, densely pubescent at veins, base cordate, 3-sect; central segment rhombic, subpinnately parted, ultimate lobes linear or narrowly ovate; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, ca. 8 cm, ca. 7-flowered; rachis and pedicels retrorse pubescent; bracts leaflike. Pedicels 2–4.5 cm, with 2 bracteoles at middle or below; bracteoles leaflike, pubescent. Sepals blue, adaxially appressed pubescent; lower sepals obliquely obovate or linear, ca. 1.1 cm × 2–5 mm; lateral sepals obliquely broadly obovate, ca. 1.4 × 1.3 cm; upper sepal galeate, ca. 1.5 cm high, shortly clawed, ca. 1.6 cm from base to beak. Petals ca. 2.1 cm; claw ca. 1.5 cm, apex geniculate, sparsely yellowish pubescent; limb ca. 9 mm; lip ca. 5 mm, 2-lobed at apex; spur slightly circinate, ca. 2 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Aug.

• About 4300 m. NW Yunnan (Zhongdian Xian).

171. *Aconitum tenuicaule* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 610. 1979.

细茎乌头 *xi jing wu tou*

Caudex obconical or narrowly obovate, 1.3–2 cm, 4–6 mm in diam. Stem red-purple, 17–21 cm, ca. 2.5 mm in diam., simple, spreading pubescent. Proximal cauline leaves withered at anthesis, distal ones ca. 4, with petiole 0.8–4 cm; leaf blade cordate-pentagonal, 1.7–2.2 × 1.7–4 cm, abaxially glabrous, adaxially sparsely appressed pubescent, palmately 3-sect; segments 2- or 3-sect, ultimate lobes linear, ca. 1 mm wide. Inflorescence terminal, 1–4 cm, 3–7-flowered; rachis and pedicels densely yellowish pubescent; bracts leaflike. Pedicel 5–11 mm, proximally with 2 bracteoles;

bracteoles subulate or narrowly linear, 3–5 mm. Sepals deep purple-blue, abaxially glabrous; lower sepals suboblong, ca. 7 mm; lateral sepals obliquely broadly obovate, ca. 1.1 cm; upper sepal navicular-galeate or navicular, from base to beak 1.3–1.5 cm, lower margin slightly concave. Petals glabrous; limb ca. 6.5 mm; lip ca. 3.5 mm; spur oblique upward, ca. 1.2 mm, subglobose. Stamens glabrous; filaments entire. Carpels 4 or 5, proximally sparsely pubescent, elsewhere glabrous. Fl. Aug.

• Alpine grasslands; ca. 4000 m. NW Yunnan (Dêqên Xian).

172. *Aconitum acutiusculum* H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh 20: 198. 1950.

尖萼乌头 *jian e wu tou*

Caudex carrot-shaped, ca. 6 cm, ca. 7 mm in diam. Stem 75–120 cm tall, branched, apically and inflorescence densely curved white pubescent, or spreading yellowish glandular pubescent or pubescent. Leaf petiole 1.5–10 cm; leaf blade orbicular-pentagonal, 4–8 × 4.5–12 cm, palmately sect; ultimate lobes narrowly lanceolate or linear, both surfaces pubescent, adaxially veins concave. Inflorescence terminal, to 45 cm, many flowered; proximal bracts 3–5-fid, distal ones lanceolate, unlobed. Pedicels 1–11.5 cm, distally with 2 bracteoles; bracteoles linear. Sepals purple-blue, abaxially sparsely pubescent; lower sepals lanceolate; upper sepal navicular-galeate, 8–10 mm. Petals ca. 1.5 cm, glabrous; claw geniculate at apex; lip oblong; spur incurved. Stamens glabrous; filaments entire. Carpels 5, sericeous-pubescent. Fl. Aug.

• Grasslands, forest margins, grassy slopes; 4000–4100 m. NW Yunnan (Dêqên Xian).

- 1a. Stem apically and inflorescence densely curved white pubescent 172a. var. *acutiusculum*
1b. Stem apically and inflorescence spreading yellowish glandular pubescent or pubescent 172b. var. *aureopilosum*

172a. *Aconitum acutiusculum* var. *acutiusculum*

尖萼乌头(原变种) *jian e wu tou (yuan bian zhong)*

Stem apically and inflorescence densely curved white pubescent.

• Grasslands, forest margins; ca. 4000 m. NW Yunnan (Dêqên Xian).

172b. *Aconitum acutiusculum* var. *aureopilosum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 85. 1965.

展毛尖萼乌头 *zhan mao jian e wu tou*

Aconitum benzilanense T. L. Ming.

Stem apically and inflorescence spreading yellowish glandular pubescent or pubescent.

• Grassy slopes; ca. 4100 m. NW Yunnan (Dêqên Xian).

173. *Aconitum refractum* (Finet & Gagnepain) Handel-Mazetti, Acta Horti Gothob. 13: 108. 1939.

狭裂乌头 *xia lie wu tou*

Aconitum napellus Linnaeus var. *refractum* Finet & Gagnepain, Bull. Soc. Bot. France 51: 513. 1904; *A. angustisegmentum* W. T. Wang.

Caudex unknown. Stem ca. 1.5 m, many branched below inflorescence, glabrous or apically sparsely retrorse pubescent, with leaves equally arranged along stem. Middle cauline leaves slightly long petiolate; petiole ca. 3 cm, sparsely retrorse pubescent; leaf blade pentagonal, ca. 10 × 14 cm, abaxially glabrous, adaxially sparsely appressed pubescent, base shallowly cordate, 3-sect or -parted nearly to 2.5 mm from base; central segment narrowly ovate-rhombic or narrowly rhombic, margin 2–4-dentate; lateral segments unequally 2-parted nearly to base. Inflorescence terminal, to 55 cm, many flowered; rachis and pedicels densely retrorse and appressed pubescent; proximal bracts leaflike, distal ones linear or narrowly linear. Pedicels 1.2–5 cm, oblique upward, apex slightly curved, with 2 bracteoles below middle or nearly to base; bracteoles linear-subulate, 2.5–3 mm. Sepals blue, abaxially sparsely pubescent; lower sepals ca. 1 cm; lateral sepals 1.2–1.5 cm; upper sepal navicular, 1.2–1.6 cm high, 1.3–1.6 cm from base to beak, lower margin oblique upward, curved. Petals pubescent above; lip ca. 4 mm, slightly concave; spur incurved, ca. 1 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous or pubescent. Fl. Sep.

• Grassy slopes. W Sichuan, E Xizang (Qamdo Xian).

174. *Aconitum xiangchengense* W. T. Wang, Acta Bot. Yunnan. 4: 130. 1982.

乡城乌头 *xiang cheng wu tou*

Caudex unknown. Stem basally glabrous, apically densely retrorse white pubescent. Middle cauline leaves long petiolate; petiole ca. 6.5 cm, glabrous; leaf blade pentagonal, ca. 7.5 × 11.5 cm, papery, abaxially glabrous, adaxially sparsely pubescent or subglabrous, base cordate-truncate, 3-sect; central segment rhombic or cuneate-rhombic, 3-lobed, ultimate lobes triangular or ovate; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal, ca. 20 cm, sparsely 5–7-flowered; rachis and pedicels densely retrorse white pubescent; proximal bracts leaflike, shortly stipitate, distal ones oblong. Pedicels 2–4.5 cm, with 2 bracteoles proximally or at base; bracteoles linear, 4–7 mm, subglabrous. Sepals white, abaxially appressed pubescent; lower sepals oblong, ca. 1.2 cm × 2.5–4 mm; lateral sepals obliquely broadly obovate, ca. 1.4 × 1.2 cm; upper sepal navicular or galeate-navicular, shortly beaked, ca. 1.8 cm from base to beak. Petals ca. 1.7 cm; claw ca. 1.3 cm, densely villous; limb ca. 8 mm; spur decurved, ca. 2 mm, glabrous; lip ca. 4 mm, apex slightly concave, pubescent. Stamens pilose; filaments entire or 2-denticulate. Carpels 3, densely appressed pubescent. Fl. Aug.

• Grasslands; ca. 3600 m. W Sichuan (Xiangcheng Xian).

175. *Aconitum sinonapelloides* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 87. 1965.

拟缺刻乌头 ni que ke wu tou

Caudex carrot-shaped or fusiform, 3–6 cm, 6–10 mm in diam. Stem 30–50 cm tall, simple, nearly glabrous, apically sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones with petiole 2.5–8 cm; leaf blade orbicular-pentagonal, 2–6 × 3.2–9 cm, abaxially nearly glabrous, adaxially sparsely pubescent, base cordate, 3-sect or -parted nearly to base 1–4 mm; central segment rhombic, pinnately parted; lateral segments obliquely flabellate, 2-parted nearly to base. Inflorescence 7–15 cm, many flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike, distal ones lanceolate. Pedicels 0.5–2 cm, glabrous or distally spreading pubescent, with 2 bracteoles proximally to distally or at apex; bracteoles leaflike, lanceolate, or subulate, ca. 4 mm. Sepals blue, abaxially glabrous or rarely pubescent; lower sepals ca. 1.4 cm; lateral sepals broadly obovate, 1.4–1.5 cm; upper sepal navicular-galeate or navicular, shortly beaked, 2.7–3.1 cm from base to beak, lower margin erect or concave. Petals glabrous or pubescent; claw slender; limb ca. 7 mm, glabrous or lip sparsely pubescent at lower part; spur incurved, 1.5–3 mm. Stamens glabrous; filaments entire. Carpels 4 or 5, glabrous or sparsely pubescent or ovary densely pubescent. Fl. Aug.

• Scrub, by streams; 3000–5100 m. SW Sichuan, NW Yunnan.

- 1a. Pedicels spreading pubescent distally; ovary densely pubescent 175b. var. *weisiense*
- 1b. Pedicels glabrous; ovary glabrous or sparsely pubescent.
 - 2a. Bracteoles distal or at apex of pedicels, leaflike or lanceolate 175a. var. *sinonapelloides*
 - 2b. Bracteoles proximal on pedicels, subulate 175c. var. *subulatum*

175a. *Aconitum sinonapelloides* var. *sinonapelloides*

拟缺刻乌头(原变种) ni que ke wu tou (yuan bian zhong)

Aconitum napelloides Handel-Mazzetti.

Bracteoles at distal part or at apex of pedicels, leaflike or lanceolate. Pedicels glabrous. Ovary glabrous or sparsely pubescent.

• Scrub; 4500–5100 m. SW Sichuan (Muli Zang Zu Zizhixian), NW Yunnan (Zhongdian Xian).

175b. *Aconitum sinonapelloides* var. *weisiense* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 87. 1965.

展毛拟缺刻乌头 zhan mao ni que ke wu tou

Pedicels spreading pubescent distally. Ovary densely pubescent.

• By streams, ca. 3500 m. NW Yunnan (Weixi Lisu Zu Zizhixian).

175c. *Aconitum sinonapelloides* var. *subulatum* W. T. Wang & P. K. Hsiao in W. T. Wang, Acta Bot. Yunnan. 4: 133. 1982.

钻苞拟缺刻乌头 zuan bao ni que ke wu tou

Bracteoles proximal on pedicels, subulate. Pedicels glabrous. Ovary glabrous or sparsely pubescent.

• About 3000 m. SW Sichuan (Muli Zang Zu Zizhixian).

176. *Aconitum diqingense* Q. E. Yang & Z. D. Fang, Acta Bot. Yunnan. 12: 389. 1990.

迪庆乌头 di qing wu tou

Caudex unknown. Stem ca. 70 cm, simple or branched below inflorescence, proximally glabrous, apically sparsely retrorse pubescent, with leaves equally arranged along stem. Proximal cauline leaves long petiolate, withered at anthesis; middle ones slightly long petiolate; petiole 2–4 cm; leaf blade pentagonal, 3–4 × 3–4 cm, abaxially glabrous, adaxially appressed pubescent, base cordate, 3-sect; central segment rhombic, apex acuminate, subpinnately parted; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence 8–12 cm, ca. 12-flowered; rachis and pedicels densely retrorse pubescent; proximal bracts leaflike, distal ones lanceolate. Pedicels 1.2–3 cm, with 2 bracteoles at ± middle or below; bracteoles linear, ca. 5 mm. Sepals blue-purple; lower sepals oblong, ca. 0.8 cm; lateral sepals broadly obovate, 1–1.3 × ca. 1 cm, abaxially subglabrous, adaxially sparsely villous, apex subrounded; upper sepal galeate or navicular-galeate, ca. 7 mm high, 1–1.5 cm from base to beak, beak 1–1.5 mm, lower margin slightly concave. Petals ca. 1.7 cm; claw ca. 1.3 cm, glabrous; limb ca. 7 mm, glabrous; spur curved, 1–1.5 mm; lip ca. 3 mm, slightly concave at apex. Stamens glabrous; filaments entire. Carpels 3, densely pilose. Fl. Aug–Sep.

• Alpine meadows; 4200–4300 m. NW Yunnan (Dêqên Xian).

177. *Aconitum brevipetalum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 88. 1965.

短瓣乌头 duan ban wu tou

Caudex carrot-shaped, 2–3.4 cm, ca. 4.5 mm in diam. Stem 40–45 cm, simple, basally glabrous, apically sparsely retrorse and appressed pubescent, with 6 or 7 leaves equally arranged along stem. Most proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 2–5 cm; leaf blade orbicular-pentagonal, 4.2–5.5 × 6.5–9 cm, abaxially glabrous, adaxially sparsely appressed pubescent, 3-sect; central segment broadly rhombic or rhombic, apex acuminate, pinnately parted; lateral segments 2- or 3-parted nearly to base. Inflorescence 3–7 cm, 5-flowered; rachis and pedicels densely retrorse and appressed pubescent; bracts leaflike. Pedicels 0.6–2.4 cm, distally with 2 bracteoles; bracteoles linear, 5–8.5 × 0.6–1 mm, glabrous. Sepals pale green, abaxially glabrous; lower sepals ca. 1 cm; lateral sepals ca. 1 cm, apex slightly sharp; upper sepal navicular, ca. 5.5 mm wide, ca. 1.4 cm from base to beak, lower margin slightly concave.

Petals ca. 6 mm, glabrous; claw ca. 4.6 mm, apex geniculate; lip ca. 2 mm; spur semiglobose, short. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Jul.

• By streams; ca. 4000 m. NW Yunnan (Weixi Lisu Zu Zizhixian).

178. *Aconitum handelianum* H. F. Comber, Notes Roy. Bot. Gard. Edinburgh 18: 224. 1934.

剑川乌头 *jian chuan wu tou*

Caudex carrot-shaped, ca. 4 cm, ca. 7 mm in diam. Stem 40–60 cm, densely pubescent or basally glabrous. Proximal cauline leaves crowded, long petiolate; petiole 6–12 cm, distal leaves shortly petiolate, pubescent; leaf blade broadly cordate or subreniform, to 4.5 × 7 cm, both surfaces glabrous, palmately 5-sect; segments subequal in size, 2- or 3-pinnately tenuisect; ultimate lobes linear, 0.5–2.5 mm wide, apex acute. Inflorescence terminal, ca. 16 cm, ca. 20-flowered; rachis and pedicels spreading yellow glandular pubescent and rarely curved white pubescent or sparsely villous; proximal bracts leaflike, distal ones linear-lanceolate. Pedicels 0.5–3 cm, with 2 bracteoles at middle; bracteoles lanceolate-linear. Sepals dark purple, abaxially pubescent; lower sepals ca. 1.2 cm; lateral sepals ca. 1.5 × 1.5 cm; upper sepal navicular, ca. 2 × 0.9 cm, with a short beak, decurved, lower margin concave. Petals ca. 2.7 cm; claw curved, sparsely pubescent; limb ca. 7 mm; lip smaller, slightly concave; spur incurved. Stamens pubescent; filaments entire, 5–7 mm. Carpels 5, densely yellow pubescent. Follicles ca. 1.2 cm; Seeds subovate. Fl. Sep.

• Scrub, grasslands; 3800–4100 m. NW and W Sichuan, NW Yunnan.

- 1a. Stem densely pubescent; rachis spreading yellow glandular pubescent and rarely curved white pubescent 178a. var. *handelianum*
1b. Stem glabrous basally; rachis sparsely villous 178b. var. *laxipilosum*

178a. *Aconitum handelianum* var. *handelianum*

剑川乌头(原变种) *jian chuan wu tou (yuan bian zhong)*
Stem densely pubescent. Rachis spreading yellow glandular pubescent and rarely curved white pubescent.

• Scrub, grasslands; ca. 4000 m. NW Yunnan (Jianchuan Xian).

178b. *Aconitum handelianum* var. *laxipilosum* Handel-Mazzetti, Acta Horti Gothob. 13: 93. 1939.

疏毛剑川乌头 *shu mao jian chuan wu tou*

Stem glabrous basally. Rachis sparsely villous.

• Alpine grasslands; 3800–4100 m. NW and W Sichuan.

179. *Aconitum smirnovii* Steinberg, Fl. URSS 7: 731. 1937.

阿尔泰乌头 *a er tai wu tou*

Caudex narrowly obconical, 3–4 cm, ca. 1 cm in diam. Stem 70–100 cm, branched, basally glabrous, apically sparsely pubescent. Proximal cauline leaves long petiolate; petiole to 15 cm, withered at anthesis, distal ones shortly petiolate; leaf blade pentagonal, to 5 × 6.5 cm, abaxially glabrous, adaxially appressed pubescent at veins, base cordate, 3-sect or -parted nearly to base; central segment rhombic, pinnately parted nearly to midvein, ultimate lobes linear; lateral segments

unequally 2-parted nearly to base. Inflorescence 8–15 cm, many flowered; rachis and pedicels spreading pubescent; proximal bracts leaflike, others linear. Pedicels 0.7–2 cm, with 2 bracteoles proximally or distally; bracteoles narrowly linear, 2.5–3 mm. Sepals blue-purple, abaxially sparsely pubescent; lower sepals ca. 0.6 cm; lateral sepals orbicular-obovate, ca. 1.2 cm; upper sepal navicular, ca. 1.4 cm from base to beak. Petals glabrous; limb ca. 8 mm; lip ca. 4.5 mm; spur ca. 1 mm. Stamens glabrous; filaments entire. Carpels 3, abaxially sparsely pubescent. Follicles 1–1.3 cm. Seeds ca. 3.5 mm. Fl. Aug–Sep.

Grassy slopes; ca. 1800 m. Xinjiang (Burqin Xian) [Mongolia, Russia (C Siberia)].

180. *Aconitum liangshanicum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 86. 1965.

凉山乌头 *liang shan wu tou*

Caudex obconical or carrot-shaped, 3–4 cm, 1–1.2 cm in diam. Stem 32–43 cm, simple or shortly 1-branched below inflorescence, sparsely retrorse and appressed yellow pubescent, with 12–15 leaves. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole ca. 4.5 cm, glabrous; leaf blade pentagonal, ca. 3.8–5.8 cm, subleathery, both surfaces glabrous, 3-sect; central segment broadly rhombic, 2- or 3-parted nearly to midvein, ultimate lobes linear, 2.5–3.6 mm wide; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence 4–8 cm, 3–6-flowered; rachis and pedicels densely retrorse and appressed pubescent; proximal bracts leaflike, distal ones oblanceolate or spatulate. Pedicels 0.7–3 cm, with 2 bracteoles above middle; bracteoles linear or subulate, 3–5 × 0.5–0.8 mm. Sepals blue-purple, abaxially curved pubescent, adaxially glabrous; lower sepals ca. 0.9 cm; upper sepal navicular-galeate, ca. 7.5 mm wide, ca. 1.2 cm from base to beak. Petals ca. 1.6 cm; claw pubescent; limb ca. 9 × 1.5 mm; lip ca. 3.5 mm, sparsely pubescent, apex slightly concave; spur oblique backward, ca. 1.5 mm. Stamens sparsely pubescent; filaments entire or 2-denticulate. Carpels 5, densely appressed pubescent. Fl. Sep.

• Grassy slopes, forests; 4300–4500 m. SW Sichuan (Yuexi Xian).

181. *Aconitum tangense* C. Marquand & Airy Shaw, J. Linn. Soc., Bot. 48. 158. 1929.

堆拉乌头 *dui la wu tou*

Caudex unknown. Stem ca. 40 cm, glabrous; Leaves long petiolate; petiole 8–11 cm; leaf blade orbicular-pentagonal, to 5.5 × 6 cm, both surfaces glabrous, 5-sect; central segment rhombic, ± duplicato-pinnatisect; ultimate lobes narrowly lanceolate or linear. Inflorescence ca. 7-flowered; rachis and pedicels glabrous; bracts leaflike. Pedicels to 4.5 cm, oblique upward, distally with 2 bracteoles; bracteoles pinnatifid, to 2 cm. Sepals glabrous abaxially, sparsely pubescent adaxially; upper sepal falcate-navicular, ca. 6 mm wide, ca. 1.5 from base to beak. Petals glabrous; claw geniculate at apex; lip slightly concave at apex; spur circinate. Stamens glabrous. Carpels 5, glabrous. Fl. Jul.
• *Rhododendron* scrub; 4200–4500 m. S Xizang (N Yadong Xian).

182. *Aconitum fangianum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 88. 1965.

刷经寺乌头 *shua jing si wu tou*

Caudex carrot-shaped, ca. 6.5 cm, ca. 1 cm in diam.

Stem ca. 70 cm, glabrous. Proximal cauline leaves withered at anthesis, distal ones shortly petiolate; petiole ca. 0.8 cm; leaf blade pentagonal, ca. 4.6 × 6 cm, abaxially glabrous, adaxially sparsely appressed pubescent at veins, 3-sect; central segment rhombic, apex acuminate, 3-parted nearly to middle; lateral segments unequally 2-parted. Inflorescence 25–30 cm, ca. 18-flowered; rachis and pedicels glabrous; proximal bracts leaflike, distal ones linear. Pedicels 6–9 cm, with 2 bracteoles at middle or above; bracteoles narrowly lanceolate or narrowly linear, 6–12 cm. Sepals purple, abaxially glabrous; lower sepals ca. 1 cm; lateral sepals 1.4–1.5 cm; upper sepal slightly oblique, navicular, ca. 6.5 mm wide, 1.7–1.8 cm from base to beak. Petals ca. 1.6 cm; claw rarely pubescent, apex subgeniculate; limb glabrous, ca. 5.5 mm; lip ca. 2.5 mm, sparsely pubescent; spur incurved, subglobose, ca. 1 mm. Stamens glabrous; filaments entire or 2-denticulate.

Carpels 3–5, glabrous. Fl. Aug.

• Grasslands; ca. 4200 m. NW Sichuan.

183. *Aconitum liljestrandii* Handel-Mazzetti, Acta Horti Gothob. 13: 108. 1939.

贡嘎乌头 *gong ga wu tou*

Caudex narrowly obconical, ca. 4 cm, ca. 1 cm in diam.

Stem to 70 cm tall, apically sparsely spreading or retrorse pubescent. Proximal cauline leaves withered at anthesis, and middle ones long petiolate, petiole 2–7.5 cm, sparsely spreading pubescent; leaf blade orbicular-pentagonal, 4–5.5 × 4–8 cm, both surfaces nearly glabrous or sparsely pubescent at veins, 3-sect; central segment rhombic or ovate-rhombic, pinnately parted; ultimate lobes linear, 1–2.5 mm wide; lateral segments unequally 2-parted nearly to base. Inflorescence 12–20 cm, densely flowered; rachis and pedicels spreading white pubescent and yellowish glandular pubescent; proximal bracts leaflike, distal ones linear. Pedicels 1–3 cm, with 2 bracteoles at middle or above; bracteoles narrowly linear, 3.5–5 mm. Sepals blue-purple, abaxially glabrous, rarely sparsely pubescent; lower sepals narrowly elliptic or linear-lanceolate, 7–11 × 1–3.5 mm; lateral sepals 1.3–1.5 cm; upper sepal navicular or falcate, 1.5–1.7 cm from base to beak. Petals glabrous or sparsely pubescent; limb ca. 7 mm; lip ca. 5 mm; spur slightly decurved, ca. 1 mm. Stamens glabrous; filaments entire. Carpels 3 or 4, glabrous. Fl. Jul–Aug.

• Scrub, grassy slopes; 3800–4600 m. W Sichuan, E Xizang.

1a. Upper sepal navicular, ca. 7 mm wide,
lower sepals narrowly elliptic, 9–11 ×
2.5–3.5 mm 183a. var. *liljestrandii*

1b. Upper sepal falcate, ca. 4.5 mm wide,
lower sepals linear-lanceolate,
7–9.5 × 1–1.5 mm 183b. var. *falcatum*

183a. *Aconitum liljestrandii* var. *liljestrandii*

贡嘎乌头(原变种) *gong ga wu tou (yuan bian zhong)*

Lower sepals narrowly elliptic, 0.9–1.1 cm × 2.5–3.5 mm; upper sepal navicular, ca. 7 mm wide.

• Grassy slopes; 4200–4600 m. W Sichuan, E Xizang.

183b. *Aconitum liljestrandii* var. *falcatum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 610. 1979.

马尔康乌头 *ma er kang wu tou*

Lower sepals linear-lanceolate, 7–9.5 × 1–1.5 mm; upper sepal falcate, ca. 4.5 mm wide.

• Scrub; ca. 3800 m. W Sichuan (Barkam Xian).

184. *Aconitum pycnanthum* W. T. Wang, Acta Bot. Yunnan. 6: 372. 1984.

密序乌头 *mi xu wu tou*

Caudex unknown. Stem ca. 1 m, apically densely retrorse and appressed pubescent. Distal leaves with petiole 1.5–2 cm; leaf blade cordate-pentagonal, 5.5–7.8 × 7–9 cm, papery, abaxially sparsely appressed pubescent at veins, adaxially sparsely appressed pubescent, base cordate, 3-sect; central segment rhombic or narrowly rhombic, apex acuminate, slightly pinnatifid; ultimate lobes broadly linear or triangular; lateral segments unequally 2-parted. Inflorescence terminal, 4–15 cm, densely 20–35-flowered; rachis and pedicels densely spreading yellowish pubescent; bracts leaflike, to 4 cm. Proximal pedicels 5–12 mm, distal ones 2–4 mm, with 2 bracteoles at middle or at base; bracteoles linear, 4–9 mm, ciliate. Sepals purple, abaxially glabrous; lower sepals oblong, ca. 7 mm; lateral sepals obliquely broadly obovate, 1.2–1.4 cm × 8.5–10 mm, adaxially sparsely villous; upper sepal navicular or navicular-galeate, 1.3–1.5 cm high, rarely clawed, with a short beak, lower margin 1.3–1.7 cm. Petals ca. 1.9 cm; claw densely villous, apex geniculate; lip ca. 4 mm, apex 2-lobed, pilose; spur slightly globose, ca. 1.7 mm, glabrous. Stamens glabrous; filaments entire or 2-denticulate. Carpels 5, glabrous. Fl. Sep.

• Grassy alpine slopes; 3900–4000 m. SW Sichuan (Muli Zang Zu Zizhixian).

185. *Aconitum bracteolosum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 610. 1979.

显苞乌头 *xian bao wu tou*

Caudex carrot-shaped, ca. 5.5 cm, ca. 7 mm in diam. Stem 35–40 cm tall, simple or slenderly 2-branched at base, sparsely spreading pubescent. Middle cauline leaves long petiolate; petiole ca. 5.5 cm, base narrowly sheathed, sparsely spreading pubescent; leaf blade cordate-pentagonal, ca. 5 × 5 cm, abaxially glabrous, adaxially sparsely appressed pubescent, 3-sect; central segment rhombic, subpinnately parted, ultimate lobes linear; lateral segments unequally 2-parted nearly to base. Inflorescence terminal, ca. 22 cm, ca. 17-flowered; rachis and pedicels sparsely pubescent; bracts leaflike. Distal pedicels 0.7–1.5 cm, distally with 2 bracteoles; proximal bracteoles leaflike, 2.5–3 cm, distal ones linear, to 1 cm. Sepals blue-purple; lower sepals oblong,

ca. 1.2 cm; lateral sepals obliquely broadly obovate, ca. 2 cm, abaxially sparsely appressed pubescent; upper sepal navicular, abaxially glabrous, shortly beaked, ca. 2 cm from base to beak. Petaline claw densely pubescent, apex geniculate; limb ca. 9 mm; lip ca. 4 mm, slightly concave at apex, margin sparsely pubescent; spur oblique backward, ca. 1.8 mm, subglobose. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Jul.

• NW Yunnan (Zhongdian Xian).

186. *Aconitum tongolense* Ulbrich, Repert. Spec. Nov. Regni Veg. 14: 299. 1916.

新都桥乌头 *xin du qiao wu tou*

Caudex carrot-shaped, ca. 3 cm, 4–6 mm in diam. Stem 36–120 cm tall, sparsely retrorse pubescent. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 1–10.5 cm, sparsely retrorse pubescent; leaf blade pentagonal, ca. 5.5 × 8 cm, both surfaces appressed puberulent or abaxially glabrous, base cordate, 3-sect; central segment ovate-rhombic, apex acuminate, subpinnately parted; ultimate lobes linear or linear-lanceolate, 2–2.8 mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence to 25 cm, 10–13-flowered; rachis and pedicels retrorse pubescent, or spreading pubescent; bracts usually leaflike. Pedicels 0.7–4 cm, with 2 bracteoles at middle; proximal bracteoles leaflike, others narrowly linear or subulate, 3–5 mm. Sepals violet-blue, abaxially glabrous or sparsely pubescent; lower sepals narrowly elliptic; lateral sepals 1–1.5 cm; upper sepal falcate, ca. 5 mm wide, 1.5–2.3 cm from base to beak, lower margin slightly concave. Petaline claw densely pubescent, apex usually geniculate; limb ca. 6 mm; lip ca. 3.5 mm, slightly concave; spur 1–1.5 cm. Stamens glabrous; filaments entire. Carpels 3, appressed pubescent. Fl. Jul–Aug.

• Grassy slopes, alpine meadows; 3800–4600 m. SW and W Sichuan, E Xizang, NW Yunnan.

1a. Inflorescence rachis and pedicels retrorse pubescent 186a. var. *tongolense*

1b. Inflorescence rachis and pedicels spreading pubescent 186b. var. *patentipilum*

186a. *Aconitum tongolense* var. *tongolense*

新都桥乌头(原变种) *xin du qiao wu tou* (*yuan bian zhong*)

Aconitum chenianum W. T. Wang.

Inflorescence rachis and pedicels retrorse pubescent.

• Grassy slopes; 3800–4600 m. SW and W Sichuan, NW Yunnan, E Xizang.

186b. *Aconitum tongolense* var. *patentipilum* Q. E. Yang & Z. D. Fang, Acta Bot. Yunnan. 12: 391. 1990.

展毛东俄洛乌头 *zhan mao dong e luo wu tou*

Inflorescence rachis and pedicels spreading pubescent.

• Alpine meadows; ca. 4100 m. NW Yunnan (Weixi Lisu Zu Zizhixian).

187. *Aconitum kagerpuense* W. T. Wang, Acta Phytotax. Sin. 31(3): 206. 1993.

卡卡波乌头 *ka ka bo wu tou*

Caudex unknown. Stem 36–40 cm tall, basally 1- or 2-branched, apically sparsely appressed pubescent, below middle glabrous. Basal and proximal cauline leaves withered at anthesis; middle cauline leaves long petiolate; petiole 4–8 cm, sparsely pubescent; leaf blade pentagonal, 4.2–5.2 cm, both surfaces appressed pubescent, 3-sect; central segment rhombic, ultimate lobes linear or linear-lanceolate; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence 15–17 cm, many flowered; rachis and pedicels densely or sparsely retrorse pubescent; proximal bracts leaflike, distal ones linear, 2–4 cm. Pedicels 0.3–4 cm, appressed pubescent, distally with 2 bracteoles; bracteoles leaflike or linear, 2.5–10 mm. Sepals blue, abaxially glabrous; lower sepals obliquely oblong, ca. 1.3 × 0.4 cm, glabrous; lateral sepals obliquely broadly obovate, ca. 1.8 × 1.5 cm, adaxially yellow sericeous; upper sepal galeate, ca. 2.2 cm from base to beak. Petals ca. 1.9 cm, glabrous, claw ca. 1.8 cm, apex subgeniculate; limb ca. 0.9 cm; lip ca. 0.3 cm, 2-lobed at apex; spur incurved, ca. 1.8 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous.

• About 4000 m. NW Yunnan (Dêqên Xian).

188. *Aconitum falciforme* Handel-Mazzetti, Acta Horti Gothob. 13: 94. 1939.

镰形乌头 *lian xing wu tou*

Caudex unknown. Stem ca. 30 cm, ca. 4 mm in diam., simple, basally glabrous, apically sparsely appressed pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis; middle ones long petiolate; petiole 3.5–4.5 cm; leaf blade orbicular-pentagonal, ca. 2.6 × 4.5 cm, both surfaces glabrous, 3-sect; central segment broadly rhombic, duplicato-pinnatisect; ultimate lobes linear, 1–2 mm wide; lateral segments obliquely flabellate, 3-sect. Inflorescence ca. 5 cm, densely 10-flowered; rachis and pedicels densely retrorse and appressed pubescent; proximal bracts leaflike. Pedicels 3–4 mm, with 2 bracteoles at middle; bracteoles narrowly triangular, ca. 2 mm. Sepals purple-blue, abaxially glabrous; lower sepals broadly lanceolate, ca. 1.4 cm; lateral sepals obliquely orbicular-obovate, ca. 1.5 cm, triangular-mucronate at apex; upper sepal falcate-navicular, lower margin concave, ca. 1.6 cm from base to beak. Petals ca. 1.9 cm, glabrous; limb ca. 7 mm; lip ca. 4.5 mm; spur incurved, ca. 0.8 mm, subglobose. Stamens ca. 6 mm, glabrous; filaments entire. Carpels 5, densely appressed pubescent. Fl. Aug.

• Alpine grasslands; ca. 4500 m. W Sichuan (Garzê Xian), ?Yunnan.

189. *Aconitum maowenense* W. T. Wang, Bull. Bot. Lab. North-East. Forest. Inst. 8: 21. 1980.

茂汶乌头 *mao wen wu tou*

Caudex carrot-shaped or subterete, 3–8 cm. Stem ca. 28 cm, simple, glabrous. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 1.5–2.6 cm, glabrous; leaf blade cordate-pentagonal, 4–5.5 × 4.8–6 cm, both surfaces glabrous, 3-sect; central segment rhombic, apex acute; ultimate lobes lanceolate-linear, 1.5–2 mm wide; lateral segments obliquely flabellate, unequally 2-parted to subbase. Inflorescence terminal, ca. 9 cm, ca. 14-flowered; rachis and pedicels glabrous; proximal bracts leaflike, distal ones linear, ca. 8 mm. Pedicels 0.5–1.5 cm, with 2 bracteoles above base; bracteoles narrowly lanceolate or triangular, 0.8–2.5 mm, glabrous. Sepals purple, abaxially glabrous; lower sepals elliptic, 0.8–1.1 cm; lateral sepals obliquely broadly obovate, 1.7–2 cm; upper sepal galeate-navicular, shortly beaked, ca. 1.8 cm from base to beak. Petals 1.2–2 cm; claw glabrous; limb ca. 8 mm; lip ca. 3.5 mm, 2-lobed, ciliate; spur incurved, 2–2.5 mm, glabrous. Stamens sparsely pilose at apex; filaments entire. Carpels 5, glabrous.

• About 4200 m. Sichuan (Maowen Qiang Zu Zizhixian).

190. *Aconitum chasmanthum* Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 142. 1905.

展花乌头 *zhan hua wu tou*

Caudex carrot-shaped, ca. 7 cm, ca. 8 mm in diam. Stem ca. 50 cm, glabrous. Leaf petiole 3–5.5 cm, glabrous; leaf blade pentagonal-orbicular, 4.2–4.8 × 4–5.6 cm, both surfaces glabrous or nearly so; central segment rhombic, base narrowly cuneate, 3-parted nearly to base; lobes ± dissected; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence ca. 15 cm, densely ca. 25-flowered; rachis and pedicels spreading pubescent; proximal bracts leaflike, distal ones linear. Proximal pedicels 4–7 mm, distally with 2 bracteoles; bracteoles linear, ca. 3 mm. Sepals blue-violet, abaxially sparsely pubescent; lower sepals oblong; lateral sepals broadly obovate or orbicular-obovate, ca. 1.3 cm; upper sepal navicular-falcate or navicular, ca. 5 mm wide, narrowly beaked, ca. 1.8 cm from base to beak, lower margin slightly concave. Petals ca. 1.5 cm; claw rarely pubescent; limb glabrous, ca. 5 mm; lip ca. 2.5 mm; spur ca. 0.7 mm, semiglobose. Stamens glabrous, rarely sparsely pubescent; filaments entire. Carpels 5, sparsely pubescent. Fl. Sep. Mountains; ca. 4600 m. SC Xizang [NW India, Mongolia, Russia (Siberia)].

191. *Aconitum prominens* Lauener, Notes Roy. Bot. Gard. Edinburgh 25: 14. 1963.

露瓣乌头 *lu ban wu tou*

Caudex carrot-shaped, ca. 5 cm, ca. 8 mm in diam. Stem to 60 cm, simple, spreading pubescent. Proximal and middle cauline leaves long petiolate; petiole 5–7 cm; leaf blade cordate-orbicular, ca. 4.5 × 6 cm, abaxially glabrous, adaxially sparsely pubescent, 3-sect;

central segment rhombic, subpinnately parted, ultimate lobes lanceolate-linear; lateral segments 2-parted nearly to base. Inflorescence to 35 cm, many flowered; rachis spreading pubescent; proximal bracts leaflike. Pedicels 1–3 cm; bracteoles linear-lanceolate. Sepals dark blue, adaxially glabrous; lower sepals oblong, ca. 1.3 cm; lateral sepals ca. 1.5 cm; upper sepal falcate, ca. 5 mm wide, shortly beaked, 1.5–2 cm from base to beak, lower margin suberect. Petals glabrous; claw geniculate at apex; limb exserted; lip slightly concave at apex; spur incurved. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Jul.

• Moist places on mountains; ca. 4400 m. E Xizang.

192. *Aconitum leiwuqiense* W. T. Wang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 8: 19. 1980.

类乌齐乌头 *lei wu qi wu tou*

Caudex carrot-shaped, 3.5–7 cm, ca. 1 cm in diam. Stem ca. 45 cm tall, simple or 1-branched, glabrous, with leaves sparsely arranged along stem. Middle cauline leaves with petiole 2.6–4 cm, glabrous; leaf blade cordate-pentagonal, ca. 4 × 6 cm, papery, 3-sect; segments dissected, ultimate lobes linear. Inflorescence 6–11 cm, densely flowered; rachis and pedicels retrorse pubescent; bracts leaflike to lanceolate. Proximal pedicels to 6 mm, distal ones shorter, with 2 bracteoles contiguous to flower, bracteoles linear. Sepals blue, glabrous; lower sepals broadly lanceolate or suborbicular, ca. 1 cm; lateral sepals obovate, 1.2–1.7 cm; upper sepal falcate-navicular or subfalcate, 1.8–2.5 cm from base to beak. Petals glabrous; limb ca. 0.8 mm, abaxially turgid; lip ca. 4.5 mm, 2-lobed; spur short, ca. 0.8 mm. Carpels 5, glabrous. Fl. Aug.

• About 4500 m. Xizang (Riwoqê Xian).

193. *Aconitum smithii* Ulbrich ex Handel-Mazzetti, Acta Horti Gothob. 13: 98. 1939.

山西乌头 *shan xi wu tou*

Aconitum smithii var. *tenuilobum* W. T. Wang.

Caudex narrowly conical or carrot-shaped, 3–3.4 cm. Stem 38–80 cm, simple or branched, apically spreading pubescent, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate; petiole 5–6 cm, glabrous; leaf blade orbicular-pentagonal, 5.2–6.5 × 7–10 cm, both surfaces glabrous, 3-sect; central segment rhombic or cuneate-rhombic, 3-fid to middle, ultimate lobes narrowly ovate to linear, 1.5–3 or 3.5–5 mm; lateral segments unequally 2-parted. Inflorescence terminal, 3–7-flowered; rachis and pedicels densely spreading yellowish pubescent; basal bracts leaflike, others linear. Pedicels 0.5–2 cm, distally with 2 bracteoles; bracteoles linear, 3–4 mm. Sepals blue-purple, abaxially sparsely pubescent; lower sepals ca. 0.8 cm; lateral sepals 1.3–1.6 cm; upper sepal navicular-galeate, 1.7–2.1 cm from base to beak, lower margin arciform-curved. Petals glabrous; lip 6 mm, slightly concave; spur incurved, globose. Stamens glabrous; filaments entire. Carpels 3

or 4, glabrous or ovary sparsely pubescent abaxially. Fl. Aug–Sep.

• Grassy slopes; 2000–2700 m. W Hebei, Shanxi.

194. *Aconitum soongoricum* (Regel) Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 141. 1905.

准噶尔乌头 *zhun ga er wu tou*

Aconitum napellus Linnaeus var. *alpinum* Regel lusus *soongoricum* Regel, Bull. Soc. Imp. Naturalistes Moscou 34(3): 106. 1861.

Caudex obconical, 2–4-chainlike, 2.2–3 cm, 0.7–1.2 cm in diam. Stem 26–120 cm, simple or branched, glabrous, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, and middle ones long petiolate; petiole ca. 7 cm; leaf blade pentagonal, 3–12 cm, both surfaces glabrous or nearly so, 3-sect; central segment broadly ovate, base shortly stipitate, subpinnately parted; ultimate lobes narrowly linear, linear, or lanceolate-linear, 3–5 mm wide. Inflorescence terminal, 14–30 cm, 7–30-flowered; rachis and pedicels glabrous or spreading pubescent; proximal bracts leaflike, upper ones linear. Pedicels 1.5–3.2 cm, with 2 bracteoles above middle; bracteoles subulate, 2–3 mm. Sepals purple; lower sepals narrowly elliptic; lateral sepals ca. 1.4 cm; upper sepal navicular or navicular-galeate, ca. 1.6 cm from base to beak. Petals glabrous; limb ca. 2 cm; lip ca. 1 cm; spur incurved, ca. 2.5 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous. Follicles 1.2–1.5 cm. Fl. Aug–Sep.

Mountains, forests; 1200–2200 m. Xinjiang [Kashmir; C Asia].

In FRPS, plants with rachis and pedicels spreading pubescent were treated as *Aconitum soongoricum* var. *pubescens* Steinberg. However, this varietal name was never validly published.

195. *Aconitum jeholense* Nakai & Kitagawa, Rep. Exped. Manchoukuo, Sect. 4, 1: 24. 1934.

热河乌头 *re he wu tou*

Caudex elliptic or obconical, ca. 1–5 cm, 4–10 mm in diam. Stem 20–120 cm tall, glabrous, sparsely retrorse pubescent, or subglabrous. Proximal cauline leaves withered at anthesis, long petiolate; petiole 1.5–9 cm; leaf blade suborbicular, 3–9 × 3–12 cm, both surfaces glabrous, 3-sect; segments dissected, ultimate lobes narrowly linear or linear, 1–2 mm wide. Inflorescence terminal, 2–40 cm, 2–35-flowered, rarely a solitary flower; rachis and pedicels glabrous, sparsely retrorse pubescent, or subglabrous; proximal bracts leaflike, distal ones linear. Pedicels 4–15 mm, distally with 2 bracteoles; bracteoles subulate. Sepals blue-purple, abaxially glabrous; lower sepals long elliptic, 6–12 × 3–5 mm, adaxially pilose; lateral sepals broadly obovate or suborbicular, 1–1.5 cm, adaxially pilose; upper sepal navicular or navicular-galeate, ca. 1.5 cm high, lower margin 1–1.5 cm. Petals glabrous; spur slightly curved; lip 2-lobed at apex. Stamens sparsely pilose; filaments 2-denticulate. Carpels 3, or 3–5, glabrous. Follicles elliptic, ca. 1 cm. Seeds oblong, ca. 3.5 mm. Fl. Aug, fr. Sep.

Grassy slopes, forests, forest margins, grasslands; 1700–3000 m. Hebei, Nei Mongol, Shandong, Shanxi [Russia (E Siberia)].

1a. Caudex ellipsoid, ca. 1 cm, ca. 4 mm in diam.; stem 20–50 cm tall, glabrous; leaf blade 3–5 × 3–5 cm; inflorescence 2–8 cm, 2–7-flowered, rachis and pedicels glabrous; upper sepal navicular; carpels 3 195a. var. *jeholense*

1b. Caudex obconical, 2–5 cm, 5–10 mm in diam.; stem 70–120 cm tall, sparsely retrorse pubescent or subglabrous; leaf blade 4–9 × 6–12 cm; inflorescence 10–40 cm, 10–35-flowered, rachis and pedicels sparsely retrorse pubescent or subglabrous; upper sepal navicular-galeate; carpels 3–5 195b. var. *angustius*

195a. *Aconitum jeholense* var. *jeholense*

热河乌头(原变种) *re he wu tou* (yuan bian zhong)

Aconitum soongoricum (Regel) Stapf var. *jeholense* (Nakai & Kitagawa) W. T. Wang.

Caudex ellipsoid, ca. 1 cm, ca. 4 mm in diam. Stem 20–50 cm tall, glabrous. Leaf blade 3–5 × 3–5 cm. Inflorescence 2–8 cm, 2–7-flowered; rachis and pedicels glabrous. Upper sepal navicular. Carpels 3.

• Grassy slopes; 1700–1800 m. Hebei, Nei Mongol, Shanxi.

195b. *Aconitum jeholense* var. *angustius* (W. T. Wang) Y. Z. Zhao, Acta Sci. Nat. Univ. Intramongol. 14(2): 222. 1983.

华北乌头 *hua bei wu tou*

Aconitum soongoricum (Regel) Stapf var. *angustius* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 90. 1965.

Caudex obconical, 2–5 cm, 5–10 mm in diam. Stem 70–120 cm tall, sparsely retrorse pubescent or subglabrous. Leaf blade 4–9 × 6–12 cm. Inflorescence 10–40 cm, 10–35-flowered; rachis and pedicels sparsely retrorse pubescent or subglabrous. Upper sepal navicular-galeate. Carpels 3–5.

Forests, forest margins, grasslands; 2000–3000 m. N Hebei, S Nei Mongol, Shandong, Shanxi [Russia (E Siberia)].

196. *Aconitum karakolicum* Rapaics, Növényt. Közlem. 6: 149. 1907.

多根乌头 *duo gen wu tou*

Caudex 2–5 cm, 1–1.8 cm in diam., chainlike. Stem ca. 1 m tall, branched, basally glabrous, apically sparsely curved pubescent, densely leaved. Middle cauline leaves shortly petiolate; petiole 0.6–1.5 cm; leaf blade pentagonal, 7–11 × 7–14 cm, both surfaces glabrous or abaxially sparsely pubescent, 3-sect; central segment broadly rhombic, duplicato-pinnatisect; ultimate lobes narrowly linear, 1.6–2.6 mm wide; lateral segments obliquely flabellate, unequally 2-fid nearly to base. Inflorescence terminal, ± densely flowered; rachis and pedicels sparsely appressed pubescent or densely

spreading pubescent; bracts lanceolate to linear. Pedicels 1.5–3 cm, with 2 bracteoles above middle; bracteoles subulate, ca. 3.5 mm. Sepals purple, abaxially sparsely pubescent; lower sepals obovate-oblong; lateral sepals 1–1.6 cm; upper sepal galeate or navicular-galeate, 1.2–2.2 cm high, clawed, 1.1–2 cm from base to beak. Petals glabrous or sparsely pubescent; lip ca. 5.5 mm; spur incurved, ca. 2 mm. Stamens sparsely pubescent; filaments entire or 2-denticulate. Carpels 3–5, glabrous. Fl. Jul–Aug.

Grassy slopes, forests; 1800–2000 m. C and NW Xinjiang [Kazakhstan].

- 1a. Inflorescence rachis and pedicels
sparsely appressed pubescent 196a. var. *karakolicum*
1b. Inflorescence rachis and pedicels
densely spreading pubescent 196b. var. *patentipilum*

196a. *Aconitum karakolicum* var. *karakolicum*

多根乌头(原变种) duo gen wu tou (yuan bian zhong)

Aconitum napellus Linnaeus var. *turkestanicum* B. Fedtschenko.

Inflorescence rachis and pedicels sparsely appressed pubescent.

Grassy slopes; ca. 1900 m. Xinjiang [Kazakhstan].

196b. *Aconitum karakolicum* var. *patentipilum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 610. 1979.

展毛多根乌头 zhan mao duo gen wu tou

Inflorescence rachis and pedicels densely spreading pubescent.

• Grassy slopes, forests; 1800–2000 m. C and NW Xinjiang.

197. *Aconitum talassicum* Popov var. *villosulum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 611. 1979.

伊犁乌头 yi li wu tou

Caudex ca. 10 m, chainlike, narrowly conical, to 7 cm, apex ca. 7 mm in diam. Stem ca. 32 cm, apically shortly branched, basally glabrous, apically ± spreading pubescent. Proximal cauline leaves withered at anthesis, middle leaves long petiolate; petiole 1.5–7 cm, distally pubescent; leaf blade pentagonal, 1.8–3.6 × 3.5–3.8 cm, papery, both surfaces pubescent, 3-sect; central segment rhombic, subpinnately parted; ultimate lobes lanceolate, linear-lanceolate, or narrowly ovate; lateral segments unequally 2-parted nearly to base. Inflorescence ca. 8 cm, ca. 7-flowered; rachis and pedicels spreading pubescent; proximal bracts leaflike, others linear. Pedicels 1–2 cm, with 2 bracteoles bordering flower; bracteoles linear, small. Sepals blue; lower sepals ca. 1.1 cm; lateral sepals obliquely broadly obovate, ca. 1.7 cm; upper sepal navicular, ca. 1.8 cm from base to beak. Petals sparsely pubescent; limb ca. 7 mm; spur decurved, ca. 1.8 mm. Stamens pubescent, ca. 6.5 mm; filaments entire or 2-denticulate. Carpels 3, densely pubescent.

• Xinjiang.

198. *Aconitum nemorum* Popov, Bull. Soc. Imp. Naturalistes Moscou, n.s., 44(3): 131. 1935.

林地乌头 lin di wu tou

Caudex 1–3 cm, 5–8 mm in diam., chainlike. Stem 40–90 cm, apically branched or simple, basally sparsely retrorse pubescent or nearly glabrous, with leaves equally arranged along stem. Proximal cauline leaves withered at anthesis, and middle ones long petiolate; petiole 3.5–6 cm; leaf blade pentagonal, 3.8–5.6(–7.2) × 4.5–8(–10) cm, both surfaces sparsely pubescent or nearly glabrous, 3-sect or -parted nearly to base; central segment broadly rhombic, subpinnatifid; lateral segments obliquely flabellate. Inflorescence terminal, 2–6-flowered; rachis and pedicels sparsely spreading pubescent; bracts linear or lanceolate. Pedicels 0.6–1.5(–4.5) cm, distally with 2 bracteoles, rarely at middle; bracteoles narrowly linear, 3.4–4.5 mm. Sepals purple, abaxially sparsely spreading pubescent; lateral sepals 1.2–1.3 cm; upper sepal galeate, 1.4–1.7 cm high, lower margin arciform-curved; lower sepals 0.8–1 cm. Petals nearly glabrous; limb ca. 7 mm; lip ca. 4 mm; spur incurved, ca. 1 mm. Stamens glabrous; filaments entire. Carpels 3, glabrous. Fl. Jul–Aug.

Grassy slopes, *Picea* forests; 2600–3000 m. Xinjiang [C Asia].

199. *Aconitum brachypodum* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 268. 1912.

短柄乌头 duan bing wu tou

Caudex carrot-shaped, 5.5–7 cm, 5–6.5 mm in diam. Stem 40–80 cm, simple or branched, sparsely retrorse and appressed pubescent, with leaves crowded. Proximal cauline leaves withered at anthesis, middle leaves shortly petiolate; petiole 0.8–3.2 cm; leaf blade ovate or broadly triangular-ovate, 3.5–5.8 × 3.6–8 cm, both surfaces glabrous or abaxially sparsely pubescent at veins, 3-sect; central segment broadly rhombic, base becoming narrow, long stipitate, subduplicato-pinnatisect; ultimate lobes linear, (1–)1.5–3 mm wide; lateral segments obliquely rhombic, unequally 2-fid to base. Inflorescence 7- to many flowered; rachis and pedicels densely curved and appressed pubescent, or rachis spreading pubescent; bracts leaflike. Pedicels 1–1.5 cm, with 2 bracteoles at middle or above; bracteoles broadly linear, 5–9 × 1.5–3.5 mm, or lanceolate-linear, ca. 3 × 0.8 mm, 2- or 3-lobed, sometimes undivided. Sepals purple-blue, abaxially pubescent; lower sepals 1.3–1.6 cm; lateral sepals 1.5–1.8 cm; upper sepal galeate or galeate-navicular, 2–3 cm high, clawed, shortly beaked. Petals glabrous; limb ca. 7 mm; spur incurved, shorter. Stamens sparsely pubescent; filaments entire or 2-denticulate. Carpels 5 or 3, densely oblique upward, yellow villous or appressed white pubescent. Fl. Sep–Oct.

• Grassy slopes, mountains; 2800–4300 m. Sichuan, Yunnan.

This species was listed by Feng (in Fu & Jin, China Pl. Red Data Book 1: 518–519. 1992) as requiring protection and propagation be-

cause of extensive harvesting of the rhizomes for medicinal purposes. The root caudex is poisonous and used as an antipyretic and in traditional medicine.

- 1a. Inflorescence rachis spreading pubescent 199b. var. *laxiflorum*
- 1b. Inflorescence rachis and pedicels densely curved and appressed pubescent.
 - 2a. Bracteoles 2- or 3-lobed, sometimes unlobed, broadly linear, 5–9 × 1.5–3.5 mm; carpels 5, ovary densely oblique upward, yellow villous 199a. var. *brachypodum*
 - 2b. Bracteoles lanceolate-linear, ca. 3 × 0.8 mm; carpels 3, ovary densely appressed white pubescent 199c. var. *crispulum*

199a. *Aconitum brachypodum* var. *brachypodum*
 短柄乌头(原变种) duan bing wu tou (yuan bian zhong)
 Inflorescence rachis and pedicels densely curved and appressed pubescent. Bracteoles 2- or 3-lobed, sometimes unlobed, broadly linear, 5–9 × 1.5–3.5 mm. Carpels 5, densely oblique upward, yellow villous.

• Grassy slopes; 2800–3700 m. SW Sichuan, NW Yunnan (Lijiang Naxi Zu Zizhixian).

199b. *Aconitum brachypodum* var. *laxiflorum* H. R. Fletcher & Lauener, Notes Roy. Bot. Gard. Edinburgh. 20: 199. 1950.

展毛短柄乌头 zhan mao duan bing wu tou
 Inflorescence rachis spreading pubescent.

• Grassy slopes, mountain slopes; 3000–4300 m. W Sichuan, N and W Yunnan.

199c. *Aconitum brachypodum* var. *crispulum* W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 97. 1965.

曲毛短柄乌头 qu mao duan bing wu tou
 Inflorescence rachis and pedicels densely curved and appressed pubescent. Bracteoles lanceolate-linear, ca. 3 × 0.8 mm. Carpels 3, densely appressed white pubescent.

• Mountains; ca. 3700 m. NW Sichuan (Jinchuan Xian).

200. *Aconitum sessiliflorum* (Finet & Gagnepain) Handel-Mazzetti, Acta Horti Gothob. 13: 88. 1939.

缩梗乌头 suo geng wu tou

Aconitum napellus Linnaeus var. *sessiliflorum* Finet & Gagnepain, Bull. Soc. Bot. France 51: 513. 1904; *A. rotundifolium* Karelina & Kirilov var. *sessiliflorum* (Finet & Gagnepain) Rapais.

Caudex unknown. Stem 65–120(–150) cm, simple, or 1-branched below inflorescence, basally glabrous, apically sparsely retrorse pubescent, with crowded leaves. Proximal cauline leaves withered at anthesis, middle ones slightly long petiolate or shortly petiolate; petiole 1.5–3.5 cm, glabrous; leaf blade pentagonal-orbicular, ca. 5 × 8 cm, both surfaces glabrous or sparsely pubescent, base deeply cordate, 3-sect;

segments sessile; central segment broadly rhombic, subpinnatisect; ultimate lobes linear-lanceolate, 2.5–3 mm wide; lateral segments obliquely flabellate, unequally 2-parted. Inflorescence terminal, 10–30 cm, 9–20-flowered; rachis and pedicels retrorse pubescent; proximal bracts leaflike or 3-fid, others linear or spatulate-linear. Pedicels 0.3–3 cm, with 2 bracteoles ± bordering flower; bracteole oblong or palmate, 7–10 × 2.5–4 mm. Sepals blue-purple, abaxially sparsely pubescent; lower sepals narrowly ovate; lateral sepals 1.5–1.6 cm; upper sepal galeate, 2–2.5 cm high, shortly beaked. Petals glabrous; lip ca. 5 mm; spur incurved, ca. 2 mm. Stamens sparsely pubescent; filaments entire. Carpels 5, densely appressed pubescent. Fl. Aug. 2n = 16*.

• Scrub, grassy slopes; 3500–4100 m. W Sichuan, ?Yunnan.

201. *Aconitum glabrisepalum* W. T. Wang, Fl. Reipubl. Popularis Sin. 27: 611. 1979.

无毛乌头 wu mao wu tou
 Plants glabrous throughout. Caudex carrot-shaped, 3–4.5 cm, 7–10 mm in diam. Stem ca. 64 cm, simple, glabrous, with leaves equally arranged and crowded along stem. Proximal cauline leaves withered at anthesis, middle ones slightly long or shortly petiolate; petiole ca. 3.5 cm; leaf blade orbicular-pentagonal, 3.8–5 × 5.5–6.5 cm, thinly leathery, 3-sect; central segment broadly obovate, dissected; ultimate lobes linear, 1.5–3 mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence ca. 20 cm, ca. 10-flowered; proximal bracts leaflike, others linear. Pedicels 1–4 cm, distally with 2 bracteoles; bracteoles subulate-linear, 2–3.5 × 0.5–0.7 mm. Sepals blue-purple; lower sepals ca. 0.9 cm; lateral sepals ca. 1.3 cm; upper sepal navicular-galeate or navicular, 5–8 mm wide, 1.2–1.4 cm from base to beak, lower margin concave. Petals glabrous; limb ca. 8 mm; lip ca. 3.5 mm, apex slightly concave; spur curved, ca. 1.5 mm. Filaments entire. Carpels 5. Fl. Sep.

• Slopes. W Sichuan (Kangding Xian).

202. *Aconitum polyschistum* Handel-Mazzetti, Acta Horti Gothob. 13: 100. 1939.

多裂乌头 duo lie wu tou
 Caudex subfusiform, ca. 3 cm. Stem 56–100 cm, branched, sparsely retrorse and appressed pubescent, basally usually becoming glabrous, with crowded leaves. Middle cauline leaves shortly petiolate; petiole ca. 5 mm; leaf blade ovate, ca. 6.5 × 4 cm, both surfaces glabrous, 3-sect; central segment ovate, long stipitate, subpinnatisect; ultimate lobes linear, 1–1.5 mm wide; lateral segments unequally 2-parted. Inflorescence terminal, 15–28 cm, 12–30-flowered; rachis and pedicels densely retrorse pubescent; proximal bracts leaflike or 3-fid, others linear. Pedicels 0.5–3 cm, with 2 bracteoles above middle; bracteoles linear or linear-subulate, 1.5–3 mm. Sepals purple-blue, abaxially densely pubescent; lower sepals narrowly elliptic, ca. 1.2 cm; lateral sepals ca. 1.4 cm; upper sepal galeate-navicular, clawed, 1.5–1.7 cm from

base to beak. Petals glabrous; lip ca. 4 mm; spur short, recurved. Stamens pubescent; filaments entire. Carpels 3, densely appressed pubescent. Follicles to 1.9 cm, pubescent. Seeds ca. 3 mm. Fl. Aug–Oct.

• Grassy slopes; 2600–3600 m. NW and W Sichuan.

203. *Aconitum flavum* Handel-Mazzetti, Acta Horti Gothob. 13: 86. 1939.

伏毛铁棒锤 fu mao tie bang chui

Aconitum anthora Linnaeus var. *gilvum* Maximowicz; *A. gilvum* (Maximowicz) Handel-Mazzetti.

Caudex carrot-shaped, ca. 4.5 cm, ca. 8 mm in diam. Stem 35–100 cm, usually simple, basally glabrous, apically retrorse and appressed pubescent, with crowded leaves. Proximal cauline leaves withered at anthesis; middle ones shortly petiolate; petiole 3–4 mm; leaf blade broadly ovate, 3.8–5.5 × 3.6–4.5 cm, both surfaces glabrous, or margin pubescent, base shallowly cordate, 3-sect; segments dissected, ultimate lobes linear. Inflorescence 8–18 cm, 12–25-flowered; rachis and pedicels densely appressed pubescent; proximal bracts similar to leaves, those above middle linear. Petals 4–8 mm, with 2 bracteoles at apex; bracteoles linear, 3–6 mm. Sepals yellow and greenish or dark purple, abaxially pubescent; lower sepals obliquely oblong-ovate, ca. 1–1.4 cm; lateral sepals ca. 1.5 cm; upper sepal galeate-navicular, 1.5–1.6 cm high, shortly clawed, lower margin oblique upward. Petals sparsely pubescent; limb ca. 7 mm; lip ca. 3 mm; spur backward curved, ca. 1 mm. Stamens glabrous or sparsely pubescent; filaments entire. Carpels 5, glabrous or sparsely pubescent. Follicles glabrous, 1.1–1.7 cm. Seeds ca. 2.5 mm. Fl. Aug. $2n = 16^*$.

• Grassy slopes, forests; 2000–3700 m. Gansu, Nei Mongol, S Ningxia, Qinghai, NW Sichuan, N Xizang.

204. *Aconitum yinschanicum* Y. Z. Zhao, Fl. Intramongol., ed. 2, 2: 568. 1991.

阴山乌头 yin shan wu tou

Aconitum flavum Handel-Mazzetti var. *galeatum* W. T. Wang.

Caudex obconical, 3–5 cm, 0.5–1 cm in diam. Stem 50–100 cm, sparsely retrorse pubescent. Proximal cauline leaves long petiolate, withered at anthesis, distal ones shortly petiolate; petiole 3–4 mm; leaf blade suborbicular, 2–4 × 2–4 cm, abaxially glabrous, adaxially sparsely retrorse pubescent, 3-sect; segments dissected, ultimate lobes linear, 1–3 mm wide. Inflorescence terminal, sometimes branched proximally, many flowered; rachis and pedicels densely appressed and retrorse pubescent; proximal bracts leaflike, those above middle linear. Pedicels 5–10 cm, distally with 2 bracteoles; bracteoles linear-lanceolate, 3–5 mm. Sepals blue-purple, abaxially retrorse pubescent; lower sepals oblong-lanceolate, 8–10 mm; lateral sepals broadly obovate, ca. 1.8 cm; upper sepal galeate, 1.7–2 cm high. Petals glabrous; limb ca. 4 mm; lip ca. 5 mm; spur

incurved, ca. 2 mm. Stamens pubescent; filaments entire. Carpels 5, glabrous or sparsely pubescent. Follicles 1–1.5 cm, glabrous. Seeds obovate, ca. 3 mm. Fl. and fr. Aug–Sep.

• Alpine grasslands, by streams; ca. 2000 m. S Nei Mongol (Liangcheng Xian).

205. *Aconitum pendulum* Busch, Izv. Imp. S-Peterburgsk. Bot. Sada 5: 135. 1905.

铁棒锤 tie bang chui

Aconitum szechenyianum J. Gáy.

Caudex obconical. Stem 26–100 cm, simple or branched, glabrous, apically sparsely pubescent and densely leaved. Proximal cauline leaves withered at anthesis, middle leaves shortly petiolate; petiole 4–5 mm; leaf blade broadly ovate, 3.4–5.5 × 4.5–5.5 cm, both surfaces glabrous, 3–5-sect; segments dissected, ultimate lobes 1–2.2 mm wide. Inflorescence 6–20 cm, 8–35-flowered; rachis and pedicels densely spreading yellow pubescent; proximal bracts leaflike or 3-fid, distal ones linear. Pedicels 2–6 mm, distally with 2 bracteoles; bracteoles lanceolate-linear, 4–5 mm, sparsely pubescent. Sepals yellow, usually greenish, sometimes blue, abaxially ± spreading pubescent; lower sepals obliquely oblong, ca. 1 cm; lateral sepals orbicular-obovate, 1.2–1.6 cm; upper sepal navicular-falcate or falcate, clawed, lower margin 1.6–2 cm, arciform-curved. Petals glabrous or sparsely pubescent; limb ca. 8 mm; lip 1.5–4 mm; spur incurved, ca. 1 mm. Stamens glabrous or sparsely pubescent; filaments entire. Carpels 5, glabrous or ovary spreading pubescent. Follicles 1.1–1.4 cm. Seeds ca. 3 mm. Fl. Jul–Sep. $2n = 16^*$.

• Grassy slopes, forest margins; 2800–4500 m. S Gansu, W Henan, Qinghai, S Shanxi, W Sichuan, Xizang, NW Yunnan.

206. *Aconitum chilienshanicum* W. T. Wang, Acta Phytotax. Sin. 12: 157. 1974.

祁连山乌头 qi lian shan wu tou

Plants glabrous throughout. Caudex ± fusiform, ca. 3.5 cm. Stem 23–33 cm, basally sparsely leaved, apically leaves crowded. Distal leaves shortly petiolate; petiole 2–10 mm, base sheathed; leaf blade orbicular-pentagonal, 2–3 × 2.3–5 cm, 3-sect; segments dissected, ultimate lobes linear, 1–2 mm wide. Inflorescence terminal, 4–6 cm, densely flowered; bracts leaflike. Pedicels to 9 mm, distally with 2 bracteoles; bracteoles narrowly linear. Sepals yellow; lateral sepals oblong or oblong-lanceolate, 1.5–1.6 cm; upper sepal navicular, 1.5–1.9 cm from base to beak, lower margin concave. Petals glabrous; lip ca. 5 mm, apex 2-lobed; spur obliquely incurved, globose, 0.8–1.2 mm. Stamens glabrous; filaments entire. Carpels 3. Fl. Jul–Aug.

• Alpine grasslands; 3400–3900 m. Gansu (Sunan Yugur Zu Zizhixian), NE Qinghai.

207. *Aconitum ludlowii* Exell, J. Bot. 64: 218. 1926.

江孜乌头 *jiang zi wu tou*

Caudex subterete or narrowly obconical, 6–8 cm, 0.7–1.5 cm in diam. Stem (0.6–)1–1.5 m, simple or branched, glabrous, or only near inflorescence retrorse pubescent, with distal leaves crowded. Proximal cauline leaves withered at anthesis, long petiolate; petiole to 8 cm, distal leaves shortly petiolate; leaf blade suborbicular, to 7 × 8 cm, both surfaces glabrous or nearly so, base broadly cordate, 3-sect; segments dissected; ultimate lobes linear. Inflorescence 10–15 cm, 15–20-flowered; rachis and pedicels densely retrorse and appressed pubescent; proximal bracts leaflike, others linear. Proximal pedicels 4–8 mm, distal ones to 2 mm, distally with 2 bracteoles, linear, 3.5–4.5 × ca. 0.7 mm. Sepals blue, abaxially pubescent; lower sepals narrowly oblong, ca. 1.2 cm; lateral sepals ca. 1.5 cm; upper sepal falcate, ca. 1.5 cm from base to beak. Petals arciform-curved, glabrous; limb ca. 6.5 mm; lip ca. 3 mm; spur incurved, ca. 1 mm. Stamens pubescent; filaments subentire. Carpels 5, glabrous. Follicles 1.4–1.7 cm. Seeds ca. 3.5 mm. Fl. and fr. Jul.

• By streams; ca. 4000 m. Xizang (Gyangzè Xian).

208. *Aconitum coreanum* (H. Léveillé) Rapaics, Növényt. Közlem. 6: 154. 1907.

黄花乌头 *huang hua wu tou*

Aconitum delavayi Franchet var. *coreanum* H. Léveillé, Bull. Acad. Int. Géogr. Bot. 11: 300. 1902.

Caudex obovate or fusiform, ca. 2.8 cm. Stem 30–100 cm, simple or branched, sparsely retrorse pubescent, with leaves crowded. Proximal cauline leaves withered at anthesis, middle leaves slightly long petiolate; petiole 1.4–4.5 cm, glabrous, base narrowly sheathed; leaf blade broadly rhombic-ovate, 4.2–6.4 × 3.6–6.4 cm, both surfaces nearly glabrous, 3-sect; segments dissected; ultimate lobes linear or linear-lanceolate. Inflorescence terminal, 2–7-flowered; rachis and pedicels densely retrorse pubescent; proximal bracts pinnatifid, others linear. Proximal pedicel 0.8–2 cm, with 2 bracteoles at middle; bracteoles narrowly ovate to linear, 1.5–2.6 mm. Sepals yellowish, abaxially densely curved pubescent; lower sepals obliquely elliptic-ovate; lateral sepals obliquely broadly obovate; upper sepal navicular-galeate or galeate, 1.5–2 cm high, shortly beaked, lower margin 1.4–1.7 cm. Petals glabrous; claw smaller; limb ca. 6.5 mm; spur capitate, short. Stamens sparsely pubescent; filaments entire. Carpels 3, densely appressed pubescent. Follicles ca. 1 cm. Seeds 2–2.5 mm. Fl. Aug.

Grassy slopes, forests; 200–900 m. N Hebei, E Heilongjiang, Jilin, Liaoning [Korea, Mongolia, Russia (Far East)].

209. *Aconitum anthoroideum* de Candolle, Syst. Nat. 1: 366. 1818.

拟黄花乌头 *ni huang hua wu tou*

Caudex obovate or terete, 1–7 cm, 5–10 mm in diam. Stem 20–100 cm, branched or simple, basally nearly glabrous or sparsely retrorse pubescent, apically sparsely spreading pubescent, with leaves equally arranged along stem. Proximal cauline leaves long petiolate, withered at anthesis, middle ones shortly petiolate; petiole 0.5–2.5 cm; leaf blade pentagonal, 2–7 × 2.4–7 cm, abaxially nearly glabrous, adaxially sparsely curved pubescent, 3-sect; central segment broadly rhombic, pinnately parted; ultimate lobes linear, 1–3(–5) mm wide; lateral segments obliquely flabellate, unequally 2-parted nearly to base. Inflorescence terminal, 2–11 cm, 2–12-flowered; rachis and pedicels densely yellowish pubescent; proximal bracts leaflike, others linear. Pedicels 0.6–12 mm, with 2 bracteoles at flower; bracteoles linear, 3–4 × ca. 0.5 mm. Sepals yellowish, abaxially spreading pubescent; lower sepals 1.1–1.4 cm; lateral sepals 1–1.6 cm; upper sepal galeate, 1.2–1.7 cm, beak 2–5.5 mm, 1.2–1.4 cm from base to beak, lower margin slightly concave. Petals glabrous; claw geniculate at apex; limb ca. 7 × 1.4 cm; lip ca. 4 mm, slightly concave; spur subglobose, ca. 1.2 mm. Stamens glabrous; filaments entire. Carpels 4 or 5, densely yellowish villous. Follicles ca. 1.3 cm. Seeds ca. 3.5 mm. Fl. Aug–Sep. $2n = 32 + 1 - 2b$.

Scrub, grassy slopes; 1400–2000 m. N Xinjiang [Mongolia, Russia]. Alexander N. Luferov (pers. comm.) believes that this taxon is conspecific with *Aconitum anthora* Linnaeus.

210. *Aconitum polycarpum* Chang ex W. T. Wang in W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin., Addit. 1: 64. 1965.

多果乌头 *duo guo wu tou*

Caudex fusiform, ca. 5 cm. Stem 55–95 cm, 3–4 mm in diam., basally sparsely retrorse pubescent, apically densely so, with leaves arranged equally along stem. Proximal cauline leaves withered at anthesis, long petiolate; petiole 3–5.5 cm, sparsely appressed pubescent; leaf blade pentagonal, 4.5–7 × 6–8.5 cm, both surfaces sparsely appressed pubescent at veins, 3-parted nearly to base 5–8 mm; central lobe broadly rhombic; lateral lobes obliquely flabellate, unequally 2-parted to above middle. Inflorescence 3–7-flowered; rachis and pedicels retrorse pubescent; bracts leaflike. Pedicels oblique upward, 3–6 cm, with 2 bracteoles above middle; proximal bracteoles ± leaflike, 0.8–1.2 × 0.4–0.8 cm, middle bracteoles obovate or elliptic, ca. 5 mm, distal ones linear-lanceolate, 3–3.5 mm, sparsely pubescent. Sepals green, margin dark purple, both surfaces sparsely pubescent; lower sepals 8.5–9.5 cm; lateral sepals 1.8–2 cm; upper sepal navicular, 0.9–1.3 cm wide, without distinct beak, lower margin erect or slightly concave, 2.2–2.9 cm. Petals ca. 2.5 cm; claw slender, densely spreading pubescent; limb small, glabrous, hatchet-shaped, ca. 3.5 × 2 mm; lip ca. 0.8 mm, subtriangular, entire. Stamens densely spreading pubescent distally; filaments usually 2-denticulate;

anthers globose, ca. 1 mm, glabrous. Carpels 7–9, densely yellowish pubescent. Fl. Sep.

- Alpine grasslands; ca. 4000 m. NW Yunnan (Bijiang Xian).

This species belongs to *Aconitum* sect. *Sinaconitum* W. T. Wang, characterized by its upper sepal navicular; petal limb small, with secretory tissue abaxially, not spurred; lip indistinct; filament oblong basally, filiform apically, densely puberulous, and carpels 7–9.

3. *Aconitum* subgen. *Gymnaconitum* (Stapf) Rapaics, Növényt. Közlem. 6: 139. 1907.

露蕊乌头亚属 *lu rui wu tou ya shu*

Aconitum sect. *Gymnaconitum* Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 178. 1905.

Herbs annual, with taproots. Leaves palmately 3-sect; segments dissected. Sepals clawed; upper sepal navicular. Petals not spurred; lip large, flabellate, margin denticulate. Carpels 6–13.

- One species.

211. *Aconitum gymmandrum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 23: 308. 1877.

露蕊乌头 *lu rui wu tou*

Aconitum gymmandrum f. *leucanthum* W. T. Wang.

Herbs annual. Roots subterete, 5–14 cm, 1.5–4.5 mm in diam. Stem (6–)25–55(–100) cm, usually branched, sparsely or densely pubescent, basally sometimes becoming glabrous, with leaves equally arranged along stem. Basal leaves 1–3(–6), and most proximal cauline leaves usually withered at anthesis, proximal cauline leaves long petiolate; petiole 4–7 cm, distal leaves shortly petiolate; petiole 1–5 cm, base narrowly sheathed; leaf blade broadly ovate or triangular-ovate, 3.5–6.4 × ca. 4.5 cm, abaxially sparsely villous or glabrescent at veins, adaxially sparsely appressed pubescent, 3-sect; segments 2- to 3-pinnately parted; ultimate lobes narrowly ovate to narrowly lanceolate. Inflorescence 6–16-flowered; rachis and pedicels pubescent; basal bracts leaflike, other proximal ones 3-fid, those above middle lanceolate to linear. Pedicels 1–5(–9) cm, with 2 bracteoles at distal part or at apex, leaflike to linear, 0.5–1.5 cm. Sepals blue-purple, rarely white, abaxially sparsely pubescent, long clawed; lower sepals ca. 1.2 cm; lateral sepals 1.5–1.8 cm; upper sepal navicular, ca. 1.8 cm, clawed. Petals pubescent; spur headlike, short, sparsely pubescent. Stamens sparsely pubescent; filaments entire. Carpels 6–13, pubescent. Follicles 0.8–1.2 cm. Seeds obovate-globose, ca. 1.5 mm. Fl. Jun–Aug. $2n = 16^*$.

- Grassy slopes, grasslands, by streams; 500–3800 m. S Gansu, Qinghai, W Sichuan, Xizang, ?Yunnan.

