

7. STROBILANTHES Blume, Bijdr. 781, 796. 1826.

马蓝属 ma lan shu

Hu Jiaqi (胡嘉琪 Hu Chia-chi), Deng Yunfei (邓云飞); John R. I. Wood

Adenacanthus Nees; *Aechmanthera* Nees; *Apolepsis* (Blume) Haasskarl; *Baphicacanthus* Bremekamp; *Championella* Bremekamp; *Difflugossa* Bremekamp; *Goldfussia* Nees; *Gutzlaffia* Hance; *Hemigraphis* Nees; *Hymenochlaena* Bremekamp; *Lepidagathis* sect. *Apolepsis* Blume; *Parachampionella* Bremekamp; *Paragutzlaffia* H. P. Tsui; *Perilepta* Bremekamp; *Pseudaechmanthera* Bremekamp; *Pseudostenosiphonium* Lindau; *Pseudostonium* Kuntze; *Pteracanthus* (Nees) Bremekamp; *Pteroptychia* Bremekamp; *Pyrrothrix* Bremekamp; *Semnostachya* Bremekamp; *Sericocalyx* Bremekamp; *Strobilanthes* subg. *Pteracanthus* Nees; *S.* subg. *Sympagis* Nees; *Sympagis* (Nees) Bremekamp; *Tarphochlamys* Bremekamp; *Tetraglochidium* Bremekamp; *Tetragoga* Bremekamp.

Herbs, subshrubs, shrubs, [or small trees], isophyllous or weakly to strongly anisophyllous, woody species commonly pliestesial (living for several years then dying after flowering and fruiting). Stems and branches usually 4-angled, often sulcate, basally becoming woody and hollow with age. Leaves opposite, petiolate or sessile; leaf blade adaxially usually with prominent linear cystoliths and sometimes also abaxially, margin variously dentate, serrate, crenate, undulate, or entire. Inflorescences axillary and/or terminal, bracteate heads, headlike clusters, spikes (sometimes distinctly secund), or less commonly of pedicellate flowers forming an open panicle; sterile bracts usually resembling reduced leaves and often present in compound inflorescences; floral bracts usually different from leaves, persistent or caducous as flowers open, very variable in size and shape, sometimes of two types with basal sterile bracts (outermost bracts in a capitate inflorescence) differing from inner or apical fertile ones; bracteoles 2 per pedicel, usually small, sometimes absent. Calyx usually 5-lobed to base, commonly accrescent in fruit; lobes equal or with middle one distinctly longer than others, sometimes partially fused to form a bipartite or tripartite calyx. Corolla nearly always bluish, rarely white, yellow, or pink, tubular or funnel-shaped, inside glabrous apart from trichomes retaining style except in *Strobilanthes parvifolia*, *S. oresbia*, and related species; tube either gradually widened from base or narrowly cylindrical and then abruptly widened, campanulate or gibbous; limb 5-lobed; lobes usually ovate, equal or subequal, spreading, contorted in bud. Stamens usually 4 and didynamous (rarely 2, 2 fertile with 2 staminodes, or 4 fertile with a central staminode), basally monadelphous; usually 2 filaments distinctly longer than other 2; anthers included or exserted, 2-theous; thecae oblong or subspherical, parallel, erect or incurved, glabrous, basally mucicous, rarely with connective extended to a mucronate tip; pollen spherical or ellipsoid, echinate and/or variously ribbed, usually tricolporate. Ovary oblong to obovoid, 2-locular, with 2(–8) ovules per locule; style filiform, long, slender, simple, sometimes persistent after corolla falls, retained in place by trichomes on one side of corolla tube; stigma 2-cleft with one branch longer. Capsule characteristically oblong to narrowly obovoid but sometimes fusiform to narrowly ellipsoid, (2–)4(–16)-seeded; retinacula strong, curved. Seeds usually ovate or orbicular in outline and lenticular by being flattened, usually pubescent with appressed mucilaginous trichomes which become spreading when wetted, trichomes caducous in a very few species with seed glabrescent; areola usually very small but occasionally extending as a glabrous area over much of seed surface.

About 400 species: tropical Asia; 128 species (57 endemic) in China.

Note on indumentum: in many species the young inflorescence, even when a few capsules are present, is glabrous or nearly so. As the inflorescence matures, sessile glands become stipitate and older inflorescences become gland-tipped pilose, a process parallel to the development of glands and trichomes as the ovary matures into the capsule. The calyx is also accrescent in many species and the apex appears to continue growing, so calyx lobes, which are linear-oblong at anthesis, may become subspatulate in fruit. There is also a tendency for the corolla indumentum to fall as the corolla opens. Corolla indumentum is most easily observed on buds.

Note on pollen: fig. 1 and fig. 2 show 18 pollen types found in Chinese *Strobilanthes*. It should be noted that the pollen of some 20% of Chinese species is unknown and the types shown here could be construed as an oversimplification. However, the images do show the range of variation found in the genus. Two important caveats should be taken into account. Many publications illustrating *Strobilanthes* pollen from China are marred by the use of misidentified material. This is the explanation for cases where a different pollen type is given to that in a published source. A second problem relates to the degree of infraspecific variation in pollen morphology. This is largely unstudied but it is known that some of the more widespread and variable species are somewhat diverse in their pollen morphology although all plants sampled have pollen of one general type. Species known to have somewhat variable pollen include *S. atropurpurea*, *S. echinata*, *S. speciosa*, and *S. tomentosa*.

Attempts to divide *Strobilanthes* (*Strobilanthininae* sensu Bremekamp) into segregate genera have proved unsatisfactory largely because the level of homoplasy displayed by morphological characters has to date rendered subdivision impossible. Molecular studies have not yet greatly clarified the situation because of insufficient sampling, and this too is likely to prove problematic because many species are known only from the type collection or from material inadequate for molecular study. Clusters of related species are clearly discernible, but insufficient information is currently available to produce a satisfactory infrageneric classification. Species in the following account are grouped with morphologically similar and presumably related species, but the linear sequence and lack of adequate data implies that the order of species is at least partially arbitrary.

Strobilanthes lactucifolia H. Léveillé is not treated in the present account because no material has been traced. It is probably not a species of *Strobilanthes*. *Strobilanthes straminea* W. W. Smith (*Goldfussia straminea* (W. W. Smith) C. Y. Wu & C. C. Hu) from N Myanmar, included in FRPS (70: 169. 2002), is excluded from the present account because no Chinese specimen can be traced. *Strobilanthes deutzifolia* H. Léveillé is *Abelia macrotera* (Graebner & Buchwald) Rehder in the Linnaeaceae (see p. 645). *Strobilanthes gentiana* H. Léveillé is *Sesamum indicum* Linnaeus in the Pedaliaceae (see Fl. China 18: 226. 1998). *Strobilanthes hypericifolia* H. Léveillé is *Abelia uniflora* R. Brown in the Linnaeaceae (see p. 645).



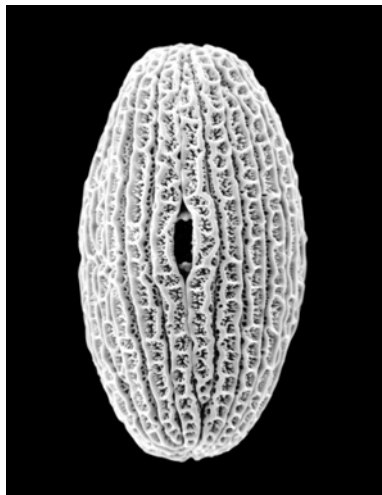
Type 1. *S. bantonensis* from Balansa 4273.



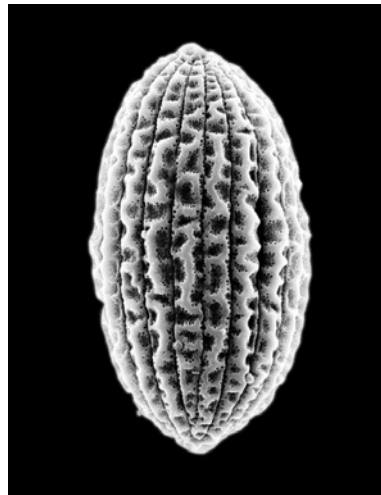
Type 2. *S. anamitica* from Maclure 8578.



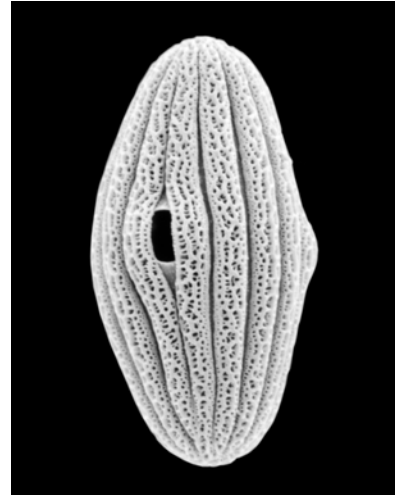
Type 3. *S. hupehensis* from Wilson 6627.



Type 4. *S. cusia* from Kingdon Ward 21622.



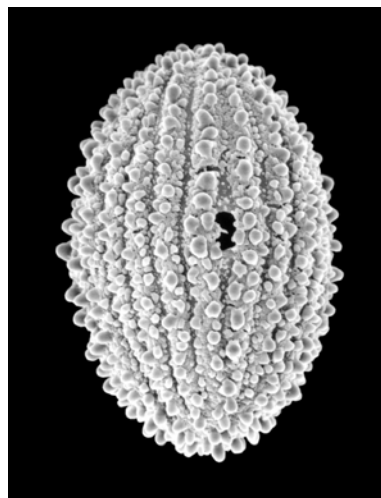
Type 5. *S. pinetorum* from Forrest 8385.



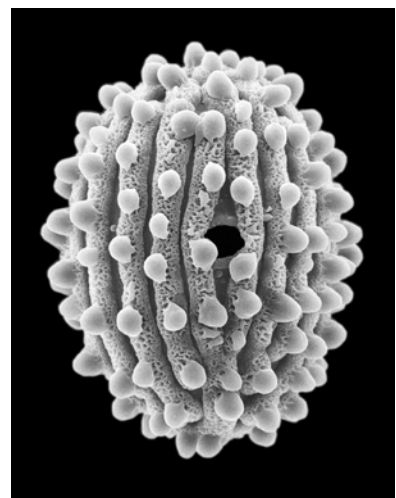
Type 6. *S. tomentosa* from Polunin 3304.



Type 7. *S. reptans* from Alston 16886.

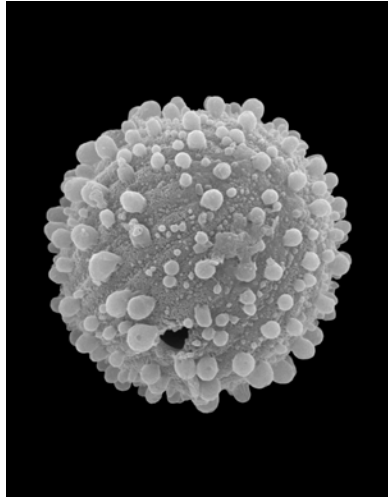


Type 8. *S. cumingiana* from Merrill 9510.

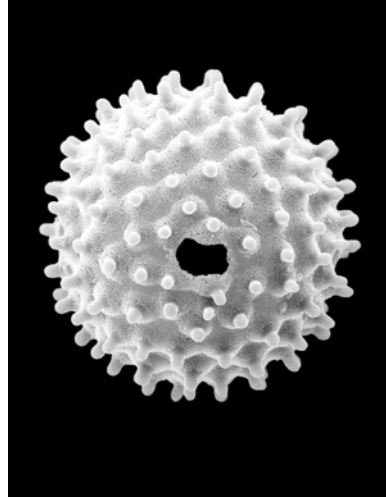


Type 9. *S. vallicola* from Xuan Xujie 74.

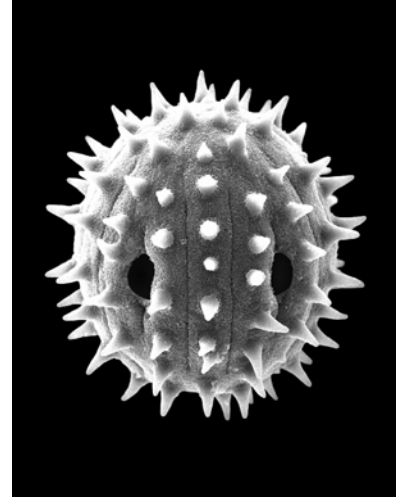
Figure 1. *Strobilanthes* pollen. SEM images of species with prolate (ellipsoid) pollen types.



Type 10. *S. tetrasperma* from Li Zhiyu 1218.



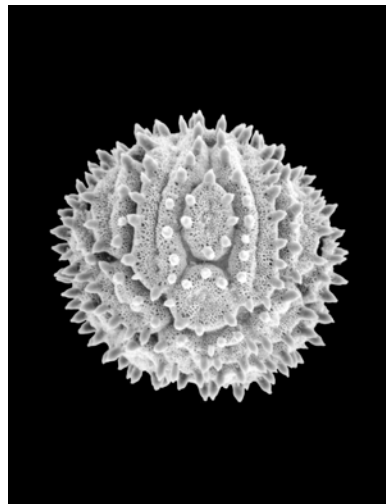
Type 11. *S. labordei* from Henry 7421.



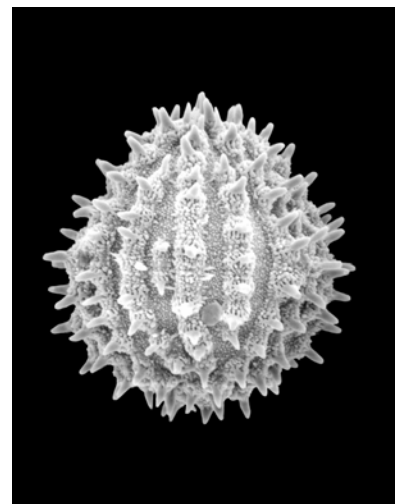
Type 12. *S. truncata* from Qin Dehai 79901.



Type 13. *S. dalzielii* from Ying Hu-Shiu 12402.



Type 14. *S. affinis* from Wilson 4302.



Type 15. *S. henryi* from Hancock 57.



Type 16. *S. parvifolia* from Kingdon Ward 8718.



Type 17. *S. cyclus* from Maire 730.



Type 18. *S. serrata* from Lace 6019.

Figure 2. *Strobilanthes* pollen. SEM images of species with spheroidal (globose) pollen types.

- 1a. Low herbs, sometimes trailing, always isophyllous; corolla less than 2.5 cm and often less than 2 cm, not obviously curved.
- 2a. Inflorescences of solitary flowers in leaf axils.
- 3a. Calyx 2-lipped, upper 3 calyx lobes partially fused 43. *S. rankanensis*
- 3b. Calyx not 2-lipped, subequally 5-lobed to base.
- 4a. Leaf blade oblong to lanceolate, 7 mm wide or less; capsule glabrous 7. *S. sinica*
- 4b. Leaf blade ovate to obovate, 8 mm wide or more; capsule apically pilose 8. *S. szechuanica*
- 2b. Inflorescences of terminal or sometimes axillary heads or spikes.
- 5a. Corolla outside glabrous; capsule 6–16-seeded.
- 6a. Leaves sessile; corolla yellow 4. *S. fluviatilis*
- 6b. Leaves petiolate; corolla blue or white.
- 7a. Leaf blade pubescent, base abruptly truncate to slightly cordate; corolla blue 5. *S. reptans*
- 7b. Leaf blade subglabrous, base cuneate to rounded; corolla white 6. *S. cumingiana*
- 5b. Corolla outside pubescent; capsule 4-seeded.
- 8a. Stems, leaves, and inflorescences white pilose 10. *S. labordei*
- 8b. Stems, leaves, and inflorescences glabrous or very sparsely hirsute.
- 9a. Corolla less than 1 cm 9. *S. wilsonii*
- 9b. Corolla 1.5–2 cm.
- 10a. Leaf blade ovate to oblong-elliptic, 2–3 × as long as broad; ovary and capsule apically pubescent 11. *S. tetrasperma*
- 10b. Leaf blade lanceolate, ca. 4 × as long as broad; ovary and capsule glabrous 12. *S. japonica*
- 1b. Herbs or subshrubs, never trailing, usually greater than 50 cm tall, anisophyllous or isophyllous; corolla greater than 2 cm, often strongly curved.
- 11a. Inflorescences subcapitate or capitellate, with flowers densely clustered in groups of 4 or more, heads occasionally becoming subspicate in fruit.
- 12a. Anthers incurved but shorter ones sometimes reflexed, ± as broad as long so subspherical or ellipsoid; bracts and bracteoles if present caducous except in *S. cuneata*, *S. kingdonii*, *S. glomerata*, and sometimes *S. capitata* and *S. speciosa*.
- 13a. Bracts greater than 1.5 cm, outermost commonly infertile, persistent, or if caducous then ovate.
- 14a. Plants isophyllous; flowers in subsessile axillary clusters; leaf blade obovate 100. *S. cuneata*
- 14b. Plants anisophyllous; flowers in pedunculate heads; leaf blade ovate to oblong-elliptic.
- 15a. Indumentum of somewhat rigid purplish trichomes 101. *S. glomerata*
- 15b. Indumentum of soft whitish trichomes.
- 16a. Outermost bracts linear-oblong to lanceolate, margin often dentate, apex obtuse; isolated flowers sometimes present below main head 104. *S. kingdonii*
- 16b. Outermost bracts lanceolate or ovate, margin entire, apex acute or acuminate; inflorescences strictly capitate.
- 17a. Bracts ovate, equaling or shorter than head; heads relatively stout, 1–3 cm broad; plants weakly anisophyllous 102. *S. capitata*
- 17b. Bracts lanceolate, commonly overtopping head; heads relatively slender, 1–1.5 cm broad; plants usually strongly anisophyllous 103. *S. speciosa*
- 13b. Bracts less than 1 cm, all normally flower-bearing, often scarious and early caducous.
- 18a. Corolla outside glabrous even on lobes and in bud.
- 19a. Leaf blade abaxially whitish; bracts fugacious; calyx in fruit with lobes subequal 114. *S. discolor*
- 19b. Leaf blade abaxially paler but not whitish; bracts usually present at anthesis; calyx in fruit with one lobe longer than others.
- 20a. Calyx without gland-tipped trichomes 107. *S. ningmingensis*
- 20b. Calyx with gland-tipped trichomes.
- 21a. Apex of bracts acute to acuminate 108. *S. dimorphotricha*
- 21b. Apex of bracts rounded or obtuse.
- 22a. Bracts glabrous; inflorescences strictly capitellate; plants weakly anisophyllous 106. *S. penstemonoides*
- 22b. Bracts gland-tipped pubescent; some flower pairs usually present below capitulum; plants strongly anisophyllous 116. *S. multidentis*
- 18b. Corolla pubescent or gland-tipped pubescent at least on lobes or in bud.
- 23a. Inflorescences subterminal, arising only from apical leaf axils; leaf blade abaxially whitish, falcate 117. *S. oligocephala*
- 23b. Inflorescences not subterminal; leaf blade if abaxially whitish then not falcate.
- 24a. Bracts fugacious, usually absent at anthesis; calyx lobes subequal.
- 25a. Plants isophyllous or weakly anisophyllous; leaves petiolate; leaf blade apex acuminate; corolla tube and lobes gland-tipped pubescent 113. *S. oxycalycina*

- 25b. Plants strongly anisophyllous; leaves sessile; leaf blade apex acute; corolla pilose only on lobes 115. *S. rhombifolia*
- 24b. Bracts usually present; calyx with one lobe longer than others.
- 26a. Apex of bracts obtuse or rounded.
- 27a. Peduncle longer so inflorescence exceeding subtending leaves 110. *S. formosana*
- 27b. Peduncle very short so inflorescence shorter than subtending leaves 111. *S. ovatibracteata*
- 26b. Apex of bracts acute or acuminate.
- 28a. Bracts gland-tipped pubescent 109. *S. glandibracteata*
- 28b. Bracts not gland-tipped pubescent.
- 29a. Plants anisophyllous 108. *S. dimorphotricha*
- 29b. Plants isophyllous 112. *S. hupehensis*
- 12b. Anthers erect, oblong, ca. 2 × as long as broad; bracts persistent at least until fruit is formed.
- 30a. Flowers arranged in small clusters along an axis forming a spike or panicle of capitula.
- 31a. Capsule 6–8-seeded; calyx lobes linear-lanceolate; anthers apiculate with an excurrent connective 1. *S. tomentosa*
- 31b. Capsule 4-seeded; calyx lobes ovate and abruptly narrowed to an apiculate apex; anthers muticous 70. *S. congesta*
- 30b. Flowers arranged in axillary or terminal capitula.
- 32a. Capsule 6-seeded or more; calyx hirsute inside at least near apex.
- 33a. Corolla blue, bracts obtuse to acute 2. *S. quadrifaria*
- 33b. Corolla yellow, bracts apically beaked 3. *S. chinensis*
- 32b. Capsule 2–4-seeded; calyx glabrous inside (except in *S. cruciata*, *S. oligantha*, and *S. wangiana*).
- 34a. Calyx 2-lipped, upper 3 lobes partially fused.
- 35a. Fertile stamens 2; leaf blade margin entire 38. *S. aprica*
- 35b. Fertile stamens 4; leaf blade margin serrate.
- 36a. Lower calyx lip with 2 lobes, lobes distinct to base; capsule 2-seeded 30. *S. cyclus*
- 36b. Lower calyx lip 2-dentate, lobes connate for most of length; capsule 4-seeded 95. *S. bipartita*
- 34b. Calyx subequally 5-lobed to base.
- 37a. Corolla completely glabrous even on lobes and tube and in bud.
- 38a. Isophyllous herbs; corolla purple 16. *S. sarcorrhiza*
- 38b. Anisophyllous subshrubs; corolla white or rarely blue.
- 39a. Stems winged; leaves sessile; anthers muticous 96. *S. retusa*
- 39b. Stems unwinged; leaves petiolate; anthers apiculate.
- 40a. Outer bracts sessile, ovate 99. *S. echinata*
- 40b. Outer bracts with a broad petiolar base, pandurate in outline.
- 41a. Petiolar base of bracts forming a rigid involucre, lamina spreading and ovate 97. *S. cruciata*
- 41b. Petiolar base not forming an involucre, bracts pandurate, apical portion narrowly lanceolate 98. *S. simonsii*
- 37b. Corolla pubescent at least on lobes or tube or in bud.
- 42a. Bracts oblanceolate, obovate, subrhomboidal, or spatulate, broadest near apex, pilose with reddish or white trichomes.
- 43a. Bracts with reddish or brownish trichomes.
- 44a. Leaves and stem reddish brown setose 20. *S. hossei*
- 44b. Leaves and stem without reddish brown trichomes.
- 45a. Bracts subrhomboidal-obovate, tips erect; pollen type 3 21. *S. torrentium*
- 45b. Bracts obovate, tips commonly recurved; pollen type 2 22. *S. anamitica*
- 43b. Bracts with white trichomes.
- 46a. Bracts distinct from leaves, obovate, with gland-tipped trichomes, apex rounded 18. *S. lihengiae*
- 46b. Bracts oblanceolate to obovate, with a few marginal teeth, densely white pilose, without gland-tipped trichomes, apically narrowed to an obtuse apex.
- 47a. Corolla 2.2–2.8 cm; plants drying dark green; inflorescences often becoming spicate in fruit 15. *S. austrosinensis*
- 47b. Corolla 2.8–3.2 cm; plants not drying dark green; inflorescences not becoming spicate in fruit 17. *S. procumbens*
- 42b. Bracts linear, lanceolate, or oblong-elliptic, widest below middle.
- 48a. Bracts commonly yellowish, overtopping capitula and giving a characteristic eared appearance 19. *S. esquirolii*
- 48b. Bracts with white trichomes, not overtopping capitula which do not have an eared appearance.
- 49a. Heads strictly terminal; calyx lobes with trichomes apically on inner surface.
- 50a. Leaf blade abaxially glabrous except on veins; corolla 3.5–4 cm 13. *S. wangiana*
- 50b. Leaf blade usually pubescent or rarely glabrous; corolla less than 3.5 cm 14. *S. oligantha*

- 49b. Heads arising from apical leaf axils; calyx glabrous inside.
- 51a. Leaf blade glabrous 24. *S. fengiana*
- 51b. Leaf blade pilose or pubescent on both surfaces.
- 52a. Corolla straight or nearly so; heads clearly axillary; plants isophyllous 23. *S. yunnanensis*
- 52b. Corolla strongly bent; heads from apical leaf axils only; plants anisophyllous.
- 53a. Heads slightly elongate; floral bracts lanceolate to oblong, pilose but margin not ciliate 25. *S. lamium*
- 53b. Heads very compact; floral bracts elliptic, margin ciliate 26. *S. cyphantha*
- 11b. Inflorescences spicate or flowers in leaf axils or arranged singly or in opposite pairs in a panicle.
- 54a. Leaf blade pinnatifid 34. *S. pinnatifida*
- 54b. Leaf blade margin dentate or serrate but never pinnatifid.
- 55a. Bracts decurrent as a wing on peduncle 48. *S. pteroclada*
- 55b. Bracts not decurrent on peduncle.
- 56a. Anthers incurved and shorter ones sometimes reflexed, subspherical or ellipsoid, \pm as broad as long; bracts and bracteoles if present caducous except in *S. longgangensis* and cultivated forms of *S. hamiltoniana* and sometimes in *S. lamifolia*.
- 57a. Inflorescences an open panicle; flowers not arranged in opposite pairs.
- 58a. Corolla arcuate, less than 3 cm; inflorescence branches with non-glandular trichomes 126. *S. euantha*
- 58b. Corolla straight, greater than 3 cm; inflorescence branches glabrous or with gland-tipped trichomes.
- 59a. Inflorescences branching at a narrower angle from axis, ultimate branches relatively stout and similar to primary branches 124. *S. hamiltoniana*
- 59b. Inflorescences branches at 90° from axis, ultimate branches very slender 125. *S. tenuiflora*
- 57b. Inflorescences spicate; flowers in opposite pairs, sometimes aggregated into a panicle.
- 60a. Inflorescences a terminal panicle of spikes.
- 61a. Leaf blade ovate, base rounded to broadly cuneate; basal leaves shortly petiolate, apical ones sessile 122. *S. mastersii*
- 61b. Leaf blade narrowly oblong-elliptic, base narrowly cuneate; leaves all petiolate 123. *S. tenax*
- 60b. Inflorescences terminal or axillary but spikes never paniculate.
- 62a. Inflorescences terminal or from apical leaf axils only.
- 63a. Inflorescences a short terminal spike; bracts mostly 1.5–2.5 cm, relatively persistent 105. *S. lamifolia*
- 63b. Inflorescences of flower pairs scattered along axis but often crowded and subcapitellate near apex; bracts mostly less than 1.5 cm, caducous.
- 64a. Corolla glabrous; bracts gland-tipped pilose 116. *S. multidentis*
- 64b. Corolla gland-tipped pubescent on lobes; bracts not gland-tipped pilose 117. *S. oligocephala*
- 62b. Inflorescences axillary spikes.
- 65a. Corolla outside pubescent.
- 66a. Calyx less than 1.3 cm; bracts often present at least on young parts; leaf blade margin serrate 119. *S. thomsonii*
- 66b. Calyx 1.6–2 cm; bracts very caducous; leaf blade margin entire or sinuate 121. *S. secunda*
- 65b. Corolla outside glabrous.
- 67a. Leaf blade ovate, base rounded to cordate; anthers slightly exerted 118. *S. medogensis*
- 67b. Leaf blade narrowly elliptic, base cuneate; anthers included 120. *S. longgangensis*
- 56b. Anthers erect, oblong, ca. 2 \times as long as broad; bracts persistent at least until fruit is formed.
- 68a. Corolla outside glabrous but pubescent inside; leaves subentire; inflorescences leafy or 1–3-flowered axillary spikes.
- 69a. Leaf blade abaxially whitish; inflorescences paniculate 127. *S. parvifolia*
- 69b. Leaf blade abaxially reddish brown; inflorescences 1–3-flowered axillary spikes 128. *S. ferruginea*
- 68b. Corolla pubescent, or if outside glabrous then also inside glabrous except for trichomes retaining style; inflorescences not as above.
- 70a. Flowers in axillary spikes, with basal persistent expanded leaflike bracts; flowers not imbricate; spikes sometimes reduced so flowers are solitary in leaf axils, not aggregated into a terminal panicle.
- 71a. Calyx 2-lipped with upper three calyx lobes distinctly connate for half their length.
- 72a. Corolla blue, not resupinate 62. *S. flexicaulis*
- 72b. Corolla white, resupinate 63. *S. lanyuensis*
- 71b. Calyx subequally 5-lobed to base.
- 73a. Corolla outside glabrous.
- 74a. Leaf blade large with some greater than 10 cm, drying blackish; corolla straight, 3.5–5 cm 61. *S. cusia*
- 74b. Leaf blade mostly less than 6 cm, not drying blackish; corolla bent at mouth, 2.5–3.5 cm.

- 75a. Calyx lobes linear, 1–1.5 mm wide, apex acute or rarely obtuse 64. *S. atropurpurea*
 75b. Calyx lobes ovate-elliptic, 3–5 mm wide, apex obtuse 65. *S. latisepala*
- 73b. Corolla outside pubescent.
 76a. Rachis of inflorescences strongly winged.
 77a. Calyx less than 2 cm; capsule glabrous 66. *S. tibetica*
 77b. Calyx 2.5–3.6 cm; capsule comose 67. *S. pterygorrhachis*
- 76b. Rachis of inflorescences not winged.
 78a. Bracts margin entire, apex obtuse; plants subglabrous 68. *S. urophylla*
 78b. Bracts margin dentate, apex acuminate; plants usually densely hirsute or rarely
 (in *S. inflata* var. *gongshanensis*) subglabrous 69. *S. inflata*
- 70b. Flowers in axillary or terminal spikes but if axillary without leaflike bracts (except sometimes
S. oresbia); flowers imbricate or not; spikes aggregated into a terminal panicle or not.
- 79a. Flowers in axillary leafless spikes (sometimes from apicalmost axils); bracts distinct from leaves,
 often inconspicuous and merging into bracteoles and calyx lobes; spikes not aggregated into a
 leafless panicle except in *S. nobilis* and *S. rostrata*; corolla outside glabrous.
- 80a. Calyx glabrous or with gland-tipped trichomes, margin never ciliate or ciliolate.
 81a. Inflorescences with flowers solitary on one side of spike; bracts linear, persistent.
 82a. Spikes strictly axillary; inflorescences glabrous 54. *S. helicta*
 82b. Spikes aggregated into a terminal panicle; inflorescences with gland-tipped trichomes 55. *S. rostrata*
- 81b. Inflorescences with flowers paired and on two sides of spike; bracts ovate to
 oblong-elliptic, somewhat caducous.
 83a. Corolla bent; leaf blade abaxially whitish, margin entire to crenate 52. *S. rubescens*
 83b. Corolla straight; leaf blade abaxially green, margin coarsely serrate.
 84a. Apex of bracts acute to obtuse; stems winged 41. *S. pateriformis*
 84b. Apex of bracts truncate; stems not winged 42. *S. truncata*
- 80b. Calyx lobes sometimes also with gland-tipped trichomes, margin ciliate or ciliolate.
 85a. Bracts with a recurved tip; inflorescences reddish brown 92. *S. brunnescens*
 85b. Bracts with an erect tip; inflorescences greenish or rarely reddish brown.
 86a. Bracts ovate, obovate, or broadly elliptic, distinctly shorter than calyx.
 87a. Bracts abaxially with 2 raised eyelike structures 84. *S. biocullata*
 87b. Bracts abaxially without raised eyelike structures although sometimes with large
 sessile glands.
 88a. Spikes from apical axils; bracts obovate-spatulate 80. *S. pseudocollina*
 88b. Spikes not restricted to apical axils; bracts ovate to elliptic.
 89a. Bracts not abruptly narrowed and without a mucronate apex.
 90a. Spikes commonly branched; flower pairs close along rachis; calyx 2-lipped
 with 3 upper lobes partially fused 81. *S. longzhouensis*
 90b. Spikes simple; flower pairs distant along rachis; calyx subequally 5-lobed
 to base 82. *S. cystolithigera*
- 89b. Bracts abruptly narrowed with a mucronate and sometimes caducous apex.
 91a. Plant drying olive-green; bracts abaxially with sessile glandular area, apex
 not fimbriate, lacking reddish brown trichomes 83. *S. abbreviata*
 91b. Plant drying blackish green; bracts abaxially without glandular area, apex
 often fimbriate with reddish brown trichomes 91. *S. fimbriata*
- 86b. Bracts lanceolate, ovate, or oblong, usually equaling or exceeding calyx.
 92a. Leaf blade often pandurate, base rounded; apical leaves sessile; spikes elongating
 beyond leaves and inflorescence often of paniculate spikes in fruit 93. *S. nobilis*
 92b. Leaf blade not pandurate, base cuneate; all leaves petiolate; inflorescence not paniculate
 in fruit.
 93a. Spikes only from terminal leaf axils.
 94a. Spikes 1–3 per axil; bracts abaxially with sessile black glands 89. *S. heteroclita*
 94b. Spikes 1 per axil; bracts abaxially lacking black glands 90. *S. mucronatoproducta*
- 93b. Spikes not restricted to terminal axils.
 95a. Spikes 1–5 per leaf axil 94. *S. polyneuros*
 95b. Spike usually 1 per leaf axil.
 96a. Bracts 2–3 cm, much exceeding calyx 88. *S. compacta*
 96b. Bracts less than 1.5 cm, ± equaling calyx.
 97a. Stems, leaves, and bracts pubescent 87. *S. guangxiensis*
 97b. Plant completely glabrous except for ciliolate margin of calyx lobes.

- 98a. Spikes often branched, robust; leaf blade oblong, some greater than 15 cm 85. *S. longespicata*
- 98b. Spikes simple, slender; leaf blade elliptic, less than 12 cm 86. *S. myura*
- 79b. Inflorescences terminal or terminal and axillary, sometimes forming a panicle of spikes, branches bearing leaves below spikes, if apparently axillary then corolla outside pubescent or bracts expanded and clearly different from calyx.
- 99a. Fertile stamens 2.
- 100a. Spikes simple; capsule glabrous apart from a few apical glands 29. *S. henryi*
- 100b. Spikes branched forming a terminal panicle of spikes; capsule pubescent.
- 101a. Bracts broadly oblong-ovate to oblong-obovate, not imbricate so flowers clearly separate 31. *S. serrata*
- 101b. Bracts obovate, imbricate 32. *S. tubiflos*
- 99b. Fertile stamens 4.
- 102a. Bracts imbricate.
- 103a. Bracts greater than 1.5 cm.
- 104a. Bracts distinct from apical leaves, ca. 3 cm, margin without prominent white cilia.
- 105a. Bracts not sticky glandular; capsule 12-seeded 2. *S. quadrifaria*
- 105b. Bracts sticky glandular; capsule 4-seeded 60. *S. cognata*
- 104b. Bracts indistinct from apical leaves, less than 2 cm, margin with prominent white cilia.
- 106a. Bracts ovate to elliptic; corolla 3–3.5 cm 14. *S. oligantha*
- 106b. Bracts obovate; corolla 2.2–2.8 cm 15. *S. austrosinensis*
- 103b. Bracts less than 1.5 cm.
- 107a. Leaves sessile; leaf blade oblong; spikes axillary as well as terminal 35. *S. auriculata*
- 107b. Leaves petiolate; leaf blade ovate or elliptic; spikes all terminal on leafy branches or main stem.
- 108a. Anthers strongly exerted from corolla 33. *S. affinis*
- 108b. Anthers included in corolla.
- 109a. Corolla outside glabrous.
- 110a. Bracts linear-spatulate, broadest at apex 57. *S. tonkinensis*
- 110b. Bracts oblong or elliptic, broadest in middle or base.
- 111a. Bracts elliptic, 5–6 mm wide 27. *S. strigosa*
- 111b. Bracts oblong, 2–3 mm wide 58. *S. stolonifera*
- 109b. Corolla outside pubescent.
- 112a. Leaves glabrous 28. *S. longiflora*
- 112b. Leaves pubescent.
- 113a. Calyx 2-lipped, 3 upper lobes partially fused 36. *S. mogokensis*
- 113b. Calyx subequally 5-lobed to base 37. *S. argentea*
- 102b. Bracts not imbricate so flowers clearly separate apart from basalmost.
- 114a. Inflorescences a 15–25 cm uninterrupted spike from apicalmost leaf axils 59. *S. vallicola*
- 114b. Inflorescences a much shorter spike but if similar in length then basalmost flowers widely spaced.
- 115a. Corolla outside glabrous.
- 116a. Calyx subequally 5-lobed to base.
- 117a. Stems and leaves sparsely pubescent 51. *S. taoana*
- 117b. Stems and leaves completely glabrous.
- 118a. Inflorescences branched; calyx glabrous; leaf blade broadly ovate to suborbicular; floral bracts 7–11 mm 53. *S. pinetorum*
- 118b. Inflorescences of simple terminal spikes; calyx gland-tipped pilose; leaf blade elliptic; floral bracts 5–6.5 mm 56. *S. chrysodelta*
- 116b. Calyx 2-lipped, 3 upper lobes partially fused.
- 119a. Bracts 2–3 cm, much longer than calyx 46. *S. adpressa*
- 119b. Bracts less than 1.4 cm, equaling or shorter than calyx.
- 120a. Bracts ovate 49. *S. ovata*
- 120b. Bracts linear-lanceolate or oblong.
- 121a. Spikes with 1–3 flower pairs; bracts greater than 10 mm 47. *S. atroviridis*
- 121b. Spikes with 1–7 flower pairs; bracts less than 8 mm.
- 122a. Bracts linear-lanceolate; rachis unwinged; plant drying blackish green 44. *S. longispica*
- 122b. Bracts oblong-ovate; rachis winged; plant not drying blackish green 45. *S. dryadum*

- 115b. Corolla outside pubescent at least in bud, on lobes, or tube.
- 123a. Plants strongly anisophyllous; corolla densely white pubescent in bud; capsule glabrous.
- 124a. Bracts linear, attenuate; calyx lobes finely acute 39. *S. dalzielii*
- 124b. Bracts oblanceolate; calyx lobes obtuse 40. *S. bantonensis*
- 123b. Plants not strongly anisophyllous; corolla not densely white pubescent in bud; capsule gland-tipped pubescent at apex.
- 125a. Leaves sessile.
- 126a. Leaf blade ovate to suborbicular, \pm as long as broad, abaxially whitish; bracts orbicular to obovate, 5–8 mm 50. *S. tamburensis*
- 126b. Leaves narrowly ovate, ca. 3 \times as long as broad, abaxially green; bracts lanceolate, 7–10 mm 75. *S. forrestii*
- 125b. Leaves petiolate.
- 127a. Corolla ventricose and strongly bent just below mouth, pubescent over its whole length.
- 128a. Corolla inside pubescent especially on lobes.
- 129a. Bracts oblong, margin entire or with a few apical teeth; spikes 2-sided 71. *S. larium*
- 129b. Bracts broadly to narrowly ovate to lanceolate, margin mostly serrate; spikes often secund 72. *S. oresbia*
- 128b. Corolla inside glabrous even on lobes.
- 130a. Bracts much reduced even at base of spike; leaf blade mostly greater than 5 cm; petiole 2–5 cm 73. *S. flexa*
- 130b. Bracts leaflike almost to spike apex; leaf blade mostly less than 5 cm; petiole (0–)1–3 cm 74. *S. versicolor*
- 127b. Corolla gradually widened above base, curved but not very strongly so, pubescent on lips only.
- 131a. Spikes extremely lax, with apical flower pairs commonly separated by greater than 1 cm along rachis; bracts ovate; calyx lobes conspicuously spatulate in fruit 78. *S. extensa*
- 131b. Spikes apically relatively dense, with flower pairs becoming imbricate along rachis; bracts linear to lanceolate; calyx lobes not usually conspicuously spatulate.
- 132a. Inflorescences mostly of simple terminal spikes; leaf blade glabrous 79. *S. spiciformis*
- 132b. Inflorescences a panicle of spikes; leaf blade pubescent at least when young.
- 133a. Leaf blade ovate, obovate, or broadly elliptic, ca. 2 \times as long as broad ... 76. *S. lachenensis*
- 133b. Leaf blade narrowly oblong-elliptic, 3–4 \times as long as broad 77. *S. nemorosa*

1. *Strobilanthes tomentosa* (Nees) J. R. I. Wood, Kew Bull. 64: 16. 2009.

尖药花 jian yao hua

Aechmanthera tomentosa Nees in Wallich, Pl. Asiat. Rar. 3: 87. 1832; *A. gossypina* (Wallich) Nees; *A. tomentosa* var. *wallichii* C. B. Clarke; *A. wallichii* Nees, nom. illeg. superfl.; *A. wallichii* var. *gossypina* (Wallich) Nees; *A. wallichii* var. *tomentosa* (Nees) Nees; *Ruellia gossypina* Wallich; *Strobilanthes blinii* H. Léveillé; *S. bodinieri* H. Léveillé; *S. cavaleriei* H. Léveillé.

Subshrubs to 1 m tall, erect, isophyllous. Stems usually gray tomentose but sometimes thinly pilose and greenish. Petiole 1–3 cm, with yellow multicellular gland-tipped trichomes; leaf blade elliptic-ovate to elliptic-oblong, 3–13 \times 2–6.5 cm, abaxially sericeous, adaxially densely covered with linear cystoliths, secondary veins 7–10 on each side of midvein, base subrounded, cuneate, or cordate and sometimes shortly decurrent onto petiole, margin crenate, apex acute. Inflorescences usually paniculate, to 30 cm, with 3–8-flowered clusters commonly on 3–8 cm axillary branches in axils of leaflike sterile

bracts, clusters sometimes aggregated to form axillary thyrses or more distant and forming an open panicle; floral bracts linear-ligulate, 0.8–1.2 cm, abaxially and marginally gland-tipped pubescent, apex obtuse; bracteoles narrowly ligulate, ca. 5 mm, similar to and smaller than or equaling calyx lobes. Calyx 0.8–1.2 cm, deeply 5-lobed to base; lobes linear, unequal with 2 longer and 3 shorter, slightly gland-tipped pilose, apex obtuse. Corolla blue, funnel-shaped, 2.5–3.5 cm, straight, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for 4–8 mm then gradually widened to ca. 1 cm at mouth; lobes ca. 5 mm, subequal, apex obtuse. Stamens 4, included; shorter filament pair ca. 6 mm, glabrous; longer filament pair 1.1–1.2 cm, pilose; anther thecae oblong, apex mucronate; connective minutely excurrent; pollen type 6. Ovary comose; style sparsely hairy. Capsule oblong, 7–10 mm, pubescent, 6–8-seeded. Seeds discoid, densely hairy, sometimes glabrescent. Fl. Jun–Dec, fr. Aug–Dec. 2n = 30.

Grassy mountain slopes, open forests in relatively dry areas; 500–2300 m. Guangxi, Guizhou, Yunnan [Bangladesh, Bhutan, India, Laos, Myanmar, Nepal, Pakistan].

This is a distinctive and apparently isolated species on account of the excurrent anther connective combined with the 6–8-seeded capsule and seeds with caducous trichomes.

Strobilanthes tomentosa was incorrectly reported as *S. glutinosa* Nees (*Pseudaechmanthera glutinosa* (Nees) Bremekamp) by Handel-Mazzetti (Symb. Sin. 7: 894. 1936).

2. *Strobilanthes quadrifaria* (Wallich ex Nees) Y. F. Deng, Acta Phytotax. Sin. 45: 849. 2007.

四列马蓝 si lie ma lan

Ruellia quadrifaria Wallich ex Nees in Wallich, Pl. Asiat. Rar. 3: 83. 1832; *Hemigraphis quadrifaria* (Wallich ex Nees) T. Anderson; *Sericocalyx quadrifarius* (Wallich ex Nees) Bremekamp.

Subshrubs (0.2–)1–1.5 m tall, isophyllous. Stems hirsute with large-celled trichomes. Petiole (0.3–)1.5–4 cm, hirsute; leaf blade elliptic to ovate, 5–18 × 2–7 cm, both surfaces scabrous and rather sparsely pilose with large pustulose white trichomes especially on veins, adaxially darker and with cystoliths, base attenuate, margin crenate-dentate, apex acute. Inflorescences axillary or terminal, subcapitate to shortly spicate, 2–5 × ca. 2 cm, very compact, densely covered with long silky white large-celled trichomes; peduncle 0.5–1.5 cm, hirsute; bracts ovate, elliptic, or broadly lanceolate, 1.5–2.5 × 0.6–1 cm, pilose with white large-celled trichomes, apically obtuse to acute; bracteoles linear-lanceolate, ca. 10 × 2 mm, pilose with white large-celled trichomes. Calyx 8–11 mm, outside pilose, inside sericeous toward apex, subequally 5-lobed; lobes linear, apex acuminate. Corolla pale purple with a whitish tube, 3–3.2 cm, straight, subglabrous except for pubescent lobes; tube basally cylindrical and narrow for 8–10 mm then gradually widened to 8–9 mm at mouth; lobes ovate, ca. 4 × 4 mm, apex rounded. Stamens 4, included; shorter filament pair 2–3 mm, glabrous; longer filament pair 4–7 mm, pilose; anther thecae oblong, ca. 2 × 0.8 mm; pollen type 6. Ovary oblong, comose; style 2–2.2 cm, pilose. Capsule oblong, 1–1.2 cm, sparsely pubescent near apex, 12-seeded. Seeds ca. 1 mm in diam., pubescent. Fl. Oct–Jan.

Moist shaded places in forests; 500–900 m. Yunnan [Laos, Myanmar, Thailand].

3. *Strobilanthes chinensis* (Nees) J. R. I. Wood & Y. F. Deng, Bot. J. Linn. Soc. 150: 388. 2006.

黄球花 huang qiu hua

Ruellia chinensis Nees in A. Candolle, Prodr. 11: 147. 1847; *Hemigraphis chinensis* (Nees) T. Anderson ex Hemsley; *Sericocalyx chinensis* (Nees) Bremekamp.

Herbs or subshrubs, 30–50(–150) cm tall, isophyllous. Stems often procumbent and rooting at base, 4-angled when young, hirsute, basally slightly woody. Petiole 4–10 mm; leaf blade obovate, obovate-elliptic, or sometimes oblong-elliptic, 1.5–11 × 1–4.5 cm, both surfaces sparsely hispid, adaxially densely covered with cystoliths, midvein impressed, secondary veins 5 on each side of midvein, purplish, and scabrous, base attenuate and decurrent onto petiole, margin crenate to slightly dentate, apex acute to shortly acuminate. Inflorescences axillary

or terminal, subcapitate; bracts imbricate, broadly to narrowly ovate, 1.5–2 cm, hirsute, usually 3-veined, apically beaked to a subobtusate point; bracteoles linear, ca. 9 mm, resembling calyx lobes. Calyx 5–11 mm, subequally 5-lobed to base; lobes linear-lanceolate, ca. 10 × 0.5 mm, outside gland-tipped pilose, inside apically pubescent, apex attenuate. Corolla yellow, 1.6–2 cm, straight; tube basally cylindrical and ca. 1 mm wide for ca. 5 mm then gradually widened to ca. 1 cm at mouth, outside pubescent, inside villous; lobes orbicular, ca. 4 mm in diam. Stamens 4, included or longer pair slightly exerted; shorter filament pair ca. 2 mm; longer filament pair ca. 5 mm; anther thecae oblong, ca. 2 mm. Ovary pilose; style ca. 2 cm, villous; stigma pilose. Capsule ca. 1 cm, pubescent, 8-seeded. Seeds yellowish, broadly ovate in outline, ca. 2 × 2 mm, subglabrous; areole large. Fl. Oct–Mar, fr. Jun–Jul.

Moist hollows along streams; near sea level to 1300 m. Guangdong, Guangxi, Hainan [Cambodia, Laos, Vietnam].

4. *Strobilanthes fluviatilis* (C. B. Clarke ex W. W. Smith) Moylan & Y. F. Deng, Bot. J. Linn. Soc. 150: 389. 2006.

溪畔黄球花 xi pan huang qiu hua

Hemigraphis fluviatilis C. B. Clarke ex W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 182. 1918; *Sericocalyx fluviatilis* (C. B. Clarke ex W. W. Smith) Bremekamp.

Herbs to 20 cm tall, isophyllous. Stems decumbent, hirsute, basally woody. Petiole 1–5 mm, coarsely pilose; leaf blade oblong, narrowly oblong-elliptic, or elliptic, 1.5–5 × 1–1.5 cm, abaxially subglabrous to thinly but coarsely pilose with pustulose trichomes, adaxially darker green with prominent linear cystoliths and glabrous or strigose-pilose, secondary veins 4 or 5 on each side of midvein, base cuneate, margin crenulate, apex obtuse. Inflorescences terminal, spikes, ca. 2.5 cm; bracts oblong, 1–1.5 cm, persistent, pilose, base cuneate, apex obtuse; bracteoles narrowly linear-elliptic, ca. 7 × 1 mm, pilose. Calyx ca. 8 mm, pilose, subequally 5-lobed almost to base; lobes linear, apex acute. Corolla yellow, 0.9–1.1 cm, glabrous; tube basally cylindrical and narrow for ca. 3 mm then gradually widened to ca. 3 mm at mouth; lobes orbicular, ca. 2 mm in diam., spreading. Stamens 4, included; filaments with a few scattered trichomes, shorter pair ca. 1 mm, longer pair ca. 2 mm; anther thecae oblong; pollen type 6. Ovary oblong, comose; style glabrous or with a few trichomes. Capsule oblong, ca. 8 mm, comose, 8–14-seeded. Seeds ca. 0.8 mm, pubescent; areola large. Fl. Feb–May.

Along streams on rocks; 200–800 m. Guangxi, Guizhou, Yunnan [Myanmar, Thailand].

5. *Strobilanthes reptans* (G. Forster) Moylan ex Y. F. Deng & J. R. I. Wood, **comb. nov.**

匍匐半插花 pu fu ban cha hua

Basionym: *Ruellia reptans* G. Forster, Fl. Ins. Austr. 44. 1786; *Hemigraphis okamotoi* Masamune; *H. pacifica* Hosokawa; *H. primulifolia* (Nees) Fernández-Villar; *H. reptans* (G. Forster) T. Anderson ex Hemsley; *H. tawadana* Ohwi; *R. primulifolia* Nees.

Herbs to 50 cm tall, perennial, isophyllous. Stems some-

times rosette-forming but usually prostrate and rooting at nodes, sparsely to densely covered with multicellular trichomes. Petiole 0.5–8 cm, pubescent, glabrescent; leaf blade oblong, elliptic, oblong-ovate, or suborbicular, 1.5–8 × 1–4 cm, both surfaces pubescent with multicellular trichomes, secondary veins 4 or 5 on each side of midvein, base abruptly truncate to slightly cordate, margin crenate to subentire, apex acute to obtuse. Inflorescences terminal, spikes, elongating to 6–8 cm at maturity; bracts oblanceolate to elliptic, 8–12 × 2–5 mm, persistent, pubescent on veins, margin entire and ciliate; bracteoles absent. Calyx 6.5–10 mm, 5-lobed to base; lobes linear-lanceolate, ciliate and pubescent along veins, apex finely attenuate. Corolla white or pale violet with darker veins, 1.3–1.5 cm, glabrous; tube basally cylindrical for 4–6 mm; lobes orbicular, 2–5 mm, glabrous. Stamens 4, included; shorter filament pair ca. 1 mm, glabrous; longer filament pair ca. 2 mm, base slightly villous; anther thecae ca. 1 mm; pollen type 7. Ovary apex pubescent; style sparsely villous. Capsule 7–9 mm, apically pubescent, 8–16-seeded. Seeds orbicular in outline, ca. 1 mm in diam., pubescent. Fl. Apr–Sep, Dec.

Weed of roadsides, ponds, and streamsides; near sea level to 400 m. Taiwan [Indonesia, Japan, Malaysia, Papua New Guinea, Philippines; Australia, Pacific islands (New Caledonia)].

The apparent earlier homonym, “*Strobilanthes reptans* Bojer” (Nees in Candolle, Prodr. 11: 368. 1847) was merely cited as a synonym and was therefore not validly published (*Vienna Code*, Art. 34.1(e)); hence it does not preclude valid publication of the new combination made here. The apparent new combination “*Strobilanthes primulifolia*” (Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 483. 2010), based on *Ruellia primulifolia* Nees, was not validly published because a full and direct reference to the place of valid publication of the basionym was not provided (Art. 33.4; “in DC., Prodr. 11: 144. 1847” was cited, but that publication cited the actual place: Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 382. 1843).

Strobilanthes reptans is an ornamental plant.

6. *Strobilanthes cumingiana* (Nees) Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 483. 2010.

直立半插花 zhi li ban cha hua

Ruellia cumingiana Nees in A. Candolle, Prodr. 11: 148. 1847; *Hemigraphis cumingiana* (Nees) Fernández-Villar.

Herbs to 50 cm tall, erect, isophyllous. Stems 4-angled, thinly pubescent with multicellular trichomes. Petiole 0.8–2.5 cm, sulcate, pubescent; leaf blade ovate-lanceolate, ovate, or elliptic, 4–10 × 1.5–5 cm, both surfaces densely covered with cystoliths, abaxially strigose along veins, adaxially darker and glabrous, secondary veins 5 or 6 on each side of midvein, base cuneate to rounded and often oblique, margin shallowly crenate, apex shortly acuminate. Inflorescences axillary or terminal, spikes, to 4 cm; peduncle 0.3–2 cm, pubescent to puberulent; rachis glabrous; bracts ovate, persistent, margin slightly ciliate, apex obtuse; basalmost bracts sterile, leaflike, 1.5–2 × 0.6–1 cm, margin undulate; apical bracts fertile, ca. 10 × 6 mm, margin entire; bracteoles absent. Calyx 6.5–9.5 mm, subequally 5-lobed to base; lobes lanceolate, margin ciliate, apically attenuate. Corolla white, 1.3–1.8 cm, glabrous; tube basally cylindrical for 4–6 mm; lobes orbicular, ca. 2.5 mm in diam. Stamens 4,

included; shorter filament pair 1–1.5 mm, glabrous; longer filament pair 2–3 mm, villous; anther thecae oblong, ca. 1.5 mm; pollen type 8. Ovary comose; style ca. 1 cm, hirsute. Capsule ca. 9 mm, apically pubescent, 6–8-seeded. Seeds ca. 2 × 1.2–2 mm, pubescent. Fl. Feb–May.

Forests; 100–300 m. Taiwan (Lan Yu) [Indonesia, Malaysia, Philippines].

7. *Strobilanthes sinica* (H. S. Lo) Y. F. Deng, *comb. nov.*

安龙马蓝 an long ma lan

Basionym: *Dyschoriste sinica* H. S. Lo, Acta Phytotax. Sin. 17(4): 85. 1979.

Herbs to 10 cm tall, isophyllous. Stems prostrate, 4-angled, glabrous, internodes usually less than 1 cm, rooting at basal nodes. Leaves shortly petiolate or sessile; leaf blade oblong-lanceolate, 0.7–3 × 0.3–0.7 cm, both surfaces glabrous, secondary veins ca. 3 on each side of midvein, base cuneate, margin entire or apically inconspicuously serrate, apex obtuse. Flowers axillary, solitary. Bracts similar to leaves but smaller; bracteoles linear-spatulate, 4.5–5 mm, apex obtuse. Calyx 5.5–6 mm, 5-lobed almost to base; lobes lanceolate, margin sparsely ciliate. Corolla purple, ca. 1.1 cm, straight; tube basally cylindrical and narrow for ca. 4 mm then widened to ca. 4.5 mm at throat, outside reported, perhaps erroneously, to be glabrous; lobes ?obcordate, 2–2.5 mm, subequal. Stamens 4, included; filaments glabrous, shorter pair ca. 1.2 mm, longer pair ca. 3.5 mm; anther thecae parallel; pollen type 10. Ovary glabrous; style ca. 8 mm, slightly hairy. Capsule oblong, ca. 6.5 mm, glabrous, 4-seeded. Seeds ovate in outline, ca. 2 × 2 mm, densely appressed pubescent. Fl. Aug–Sep.

• Grassy slopes; ca. 1300 m. Guizhou (Anlong).

8. *Strobilanthes szechuanica* (Batalin) J. R. I. Wood & Y. F. Deng, Bot. J. Linn. Soc. 150: 375. 2006.

四川马蓝 si chuan ma lan

Hemigraphis szechuanica Batalin, Trudy Imp. S.-Peterburgsk. Bot. Sada 13: 384. 1894.

Herbs to 20 cm tall, isophyllous. Stems decumbent, 4-angled, subglabrous, rooting at basal nodes. Petiole 3–5 mm, puberulent; leaf blade ovate to obovate, becoming suborbicular toward branch tips, 1–2 × 0.8–1 cm, glabrous or margin with a few scattered cilia, both surfaces densely covered with whitish cystoliths, secondary veins 3 or 4 on each side of midvein, base broadly cuneate and decurrent onto petiole, margin entire, apex obtuse to rounded. Flowers axillary, solitary; bracteoles oblanceolate, 5–7 × ca. 1 mm, pilose and with abundant cystoliths, margin thinly ciliate. Calyx 8–10 mm, with abundant cystoliths, 5-lobed almost to base; lobes linear to linear-lanceolate, margin ciliate, apex obtuse. Corolla pale lilac, funnel-shaped, 1.8–2.3 cm, outside pubescent; tube basally cylindrical and narrow for ca. 5 mm then gradually widened to ca. 8 mm at mouth; lobes suborbicular, ca. 3 × 3 mm, margin ciliate. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair ca. 5 mm, pilose; anther thecae oblong, ca. 2 × 1.2 mm; pollen type 10 (requires confirmation). Ovary oblong, comose; style

1.4–1.8 cm, pilose. Capsule ca. 1 cm, pilose at tip, 4-seeded. Seeds ca. 2 mm in diam., pilose. Fl. Jul–Sep.

- Streamsides, on rocks; 700–1500 m. Sichuan.

9. *Strobilanthes wilsonii* J. R. I. Wood & Y. F. Deng, Bot. J. Linn. Soc. 150: 371. 2006.

乐山马蓝 le shan ma lan

Herbs to 30 cm tall, perennial, isophyllous. Stems procumbent, sulcate, glabrous, rooting at nodes; flowering branches arising in pairs from nodes, apparently erect, 3–20 cm, sparsely bifariously pilose especially apically, with reflexed whitish large-celled trichomes. Petiole 0.5–2 cm, bifariously hirsute with short reflexed whitish trichomes; leaf blade narrowly elliptic, broadly elliptic, or obovate-spatulate, 1.5–3 × 1–1.5 cm, glabrous except for a few marginal trichomes near petiole, adaxially with prominent cystoliths, secondary veins 3–5 on each side of midvein, base attenuate, margin serrate, apex very shortly acuminate to obtuse. Inflorescences axillary or terminal, headlike spikes, 1–1.5 cm, few flowered; peduncle 0.2–1.8 cm, pilose; bracts obovate-spatulate, 4–10 × 2–6 mm, apically diminishing in size, abaxially glabrous, adaxially with a few trichomes toward base, margin basally entire and ciliate with thick white spreading trichomes and apically toothed and not ciliate, apex ± obtuse; bracteoles oblanceolate to obovate-spatulate, 2–3 × ca. 0.5 mm, margin ciliate with a few large white trichomes to 2 mm, apex ± rounded. Calyx ca. 4 mm, subequally 5-lobed to ca. 1 mm above base; lobes pale but with a green tip, linear-oblong, ca. 3.2 × 1 mm, pilose with large-celled but mostly marginal trichomes, apex obtuse. Corolla blue, 7–8 mm, funnel-shaped, outside pilose; tube basally cylindrical and ca. 1 mm wide for ca. 2 mm then gradually widened to ca. 5 mm at mouth; lobes ovate, ca. 1.5 × 1.5 mm, apex acute. Stamens 4; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 4 mm and slightly exserted; anther thecae oblong, ca. 0.5 × 0.2 mm; central staminode present, ca. 1 mm; pollen type 9. Ovary pilose; style ca. 8 mm. Capsule (immature) ca. 2.5 mm, pilose with large-celled trichomes, 4-seeded. Seeds ovate in outline, lenticular, ca. 2 × 2 mm, densely covered with appressed trichomes; areola small, glabrous. Fl. Sep–Oct.

- Moist shaded places; 800–1100 m. Sichuan.

10. *Strobilanthes labordei* H. Lévillé, Repert. Spec. Nov. Regni Veg. 12: 20. 1913.

薄叶马蓝 bao ye ma lan

Acanthopale debilis C. B. Clarke ex S. Moore; *A. labordei* (H. Lévillé) Handel-Mazzetti; *Championella debilis* Bremekamp; *C. labordei* (H. Lévillé) E. Hossain; *Strobilanthes debilis* Hemsley (1890), not C. B. Clarke (1885).

Herbs, creeping, branched, isophyllous. Stems white villous, rooting at nodes. Petiole 5–10 mm; leaf blade ovate, 2–3 × 1.5–2 cm, both surfaces white hirsute, abaxially glaucous, adaxially green and sometimes purplish dotted, secondary veins 4 or 5 on each side of midvein, base broadly cuneate to rounded, margin sparsely crenulate, apex acuminate. Inflorescences terminal, abbreviated to headlike spikes, ca. 1 cm, densely covered with large-celled white trichomes; bracts leaflike, 1–2 cm;

bracteoles linear, ca. 5 mm. Calyx 5–7 mm, 5-lobed almost to base; lobes linear-lanceolate, densely white hirsute. Corolla purplish blue to violet, 1.5–1.8 cm, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow then gradually widened to ca. 1.2 cm at mouth; lobes oblong, ca. 3 × 3 mm, subequal, apex rounded. Stamens 4; shorter filament pair ca. 3 mm; longer filament pair ca. 7 mm, exserted; anther thecae ca. 1.8 × 1 mm, weakly exserted; pollen type 11. Ovary pilose at tip; style ca. 1.2 cm, pilose. Capsule narrowly obovoid, 6–8 mm, 4-seeded, apex pilose. Seeds ovate in outline, ca. 2 × 2 mm, pubescent. Fl. Aug–Dec.

- Valleys, moist places; 400–1800 m. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan.

11. *Strobilanthes tetrasperma* (Champion ex Benth) Druce, Rep. Bot. Soc. Exch. Club Brit. Isles 1916: 649. 1917.

四子马蓝 si zi ma lan

Ruellia tetrasperma Champion ex Benth, Hooker's J. Bot. Kew Gard. Misc. 5: 132. 1853; *Acanthopale radicans* (T. Anderson ex Benth) C. B. Clarke ex Benoist; *A. tetrasperma* (Champion ex Benth) Handel-Mazzetti; *Championella tetrasperma* (Champion ex Benth) Bremekamp; *Strobilanthes radicans* T. Anderson ex Benth.

Herbs 30–50 cm tall, isophyllous. Stems often procumbent and rooting at base, 4-angled, sulcate, retrorsely pubescent along sulci, glabrescent, basally slightly woody. Petiole 0.5–2.5 cm, sulcate, glabrous; leaf blade ovate, elliptic, or oblong, 1.5–11 × 1–4.5 cm, glabrous, adaxially darker and densely covered with cystoliths, secondary veins ca. 5 on each side of midvein, base attenuate or decurrent onto petiole, margin serrate to dentate, apex acuminate to acute. Inflorescences terminal or (sometimes) axillary, short often headlike spikes, few flowered, often reduced to a single flower pair; bracts leaflike, obovate to spatulate, 1–1.5 × 0.4–0.5 cm, sparsely pilose, pinnately veined; bracteoles linear, 5–6 × ca. 1 mm, abaxially glabrous or sparsely pilose and densely covered with cystoliths. Calyx 5-lobed almost to base; lobes linear, 5–7 × ca. 1 mm, accrescent to ca. 8 mm in fruit, glabrous except for large-celled trichomes on margin, densely covered with cystoliths. Corolla purple to purplish blue, funnel-shaped, 1.5–2 cm, straight, outside pubescent, inside villous; tube basally cylindrical and ca. 2 mm wide for ca. 5 mm then gradually widened to ca. 1.5 cm at mouth; lobes oblong, ca. 4 × 5 mm, apex obtuse. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 5 mm, sparsely pubescent; anther thecae oblong, ca. 2 mm; pollen type 10. Ovary ovoid, ca. 3 mm, hispid at tip, with 4 ovules per locule; style ca. 1.5 cm, hirsute; stigma 2-lobed, lobes unequal. Capsule oblong, 7–10 mm, apically pubescent, 4-seeded. Seeds ovate in outline, ca. 2 × 2 mm, pubescent. Fl. Jul–Dec.

- Forests, shaded grasslands, rocks by streams, roadsides; 100–1000 m. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan [Vietnam].

12. *Strobilanthes japonica* (Thunberg) Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 124. 1866.

日本马蓝 ri ben ma lan

Ruellia japonica Thunberg in Murray, Syst. Veg., ed. 14,

576. 1784; *Acanthopale japonica* (Thunberg) C. B. Clarke ex S. Moore; *Championella japonica* (Thunberg) Bremekamp; *Strobilanthes bonatiana* H. Lévêillé.

Herbs 20–50 cm tall, isophyllous. Stems slender, herbaceous, much branched; branchlets purplish red, 4-angled then terete, glabrous. Petiole 2–5 cm, white pubescent; leaf blade narrowly elliptic to lanceolate, 2–5 × 0.5–1.8 cm, both surfaces glabrous and densely covered with prominent linear cystoliths, secondary veins 3–5 on each side of midvein, base cuneate to broadly cuneate, margin crenulate, apex long acuminate. Inflorescences terminal, spikes, 1–3(–5) cm, sometimes reduced to a single flower pair; bracts imbricate, oblanceolate to oblong-lanceolate, 7–10 × 2–3 mm, as long as corolla tube, glabrous except for pubescence at base, apically densely covered with cystoliths, margin entire, apex obtuse; bracteoles linear, ca. 5 mm. Calyx equally 5-lobed almost to base; lobes linear, 6–7 mm, margin ciliate, apex rounded. Corolla purplish white or white, funnel-shaped, ca. 1.5 cm, straight, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical for 5–6 mm; lobes oblong-elliptic, 5–6 mm, equal. Stamens 4, included; shorter filament pair ca. 8 mm; longer filament pair ca. 1.2 cm; anther thecae oblong, ca. 1.5 mm; pollen type 10. Ovary glabrous; style filiform, ca. 1.2 cm, pilose; stigma 2-cleft. Capsule oblong, ca. 7 mm, presumably glabrous, 4-seeded. Seeds ovate in outline, ca. 3 mm, densely appressed pubescent. Fl. Aug–Sep, fr. Oct–Nov. $2n = 30$.

Often near temples and religious sites; 500–1100 m. Chongqing, Guizhou, Hubei, Hunan, Sichuan [Japan].

Strobilanthes japonica differs from *S. tetrasperma* in its lanceolate leaves and glabrous ovary. We have seen two collections intermediate between these two species (*Yu Xunlin 91690* from Hunan and *Exped. To Flora of Yunnan, Guizhou and Guangxi 50124* from Guizhou).

“*Dyschoriste grandiflora* H. S. Lo” (C. C. Hu, FRPS 70: 79. 2002) belongs here but is a nomen nudum and was therefore not validly published (*Vienna Code*, Art. 32.1(d)).

13. *Strobilanthes wangiana* Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 473. 2010.

启无马蓝 qi wu ma lan

Herbs to 1 m tall, perennial, isophyllous. Stems sulcate, obscurely bifariously pubescent, glabrescent; nodes pustulose, sparsely pubescent. Petiole 4–5(–20) mm, almost glabrous; leaf blade elliptic to ovate-elliptic, 2.5–6 × 1.1–2.8 cm, both surfaces glabrous except for large-celled trichomes adaxially along midvein, cystoliths prominent, secondary veins 5–7 on each side of midvein, base cuneate and attenuate onto petiole, margin crenate, apex obtuse. Inflorescences terminal, subcapitate spikes, 2–4 cm, few flowered; bracts leaflike; basal bracts elliptic, 2–4 × 1–1.4 cm, apically diminishing in size, margin serrate; apical bracts oblong, 1.4–2 × 0.4–0.6 cm, abaxially sparsely pubescent, adaxially glabrous, margin ciliate and entire except for a few teeth near apex; bracteoles linear-lanceolate, 9–11 × ca. 1 mm, abaxially silky pubescent, adaxially glabrous, margin ciliate. Flowers imbricate on rachis, sessile. Calyx 1–1.3 cm, 5-lobed to ca. 3 mm above base; lobes linear-oblanceolate, 10–14 × 0.6–1 mm, outside silky pubescent, inside silky pubescent from middle apically and glabrescent toward base, margin ciliate. Corolla purplish, 3.5–4 cm,

ventricose and bent to ca. 90° at mouth, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then gradually widened to ca. 1 cm at mouth; lobes ovate, 4–5 × 4–5 mm, apex obtuse. Stamens 4, included; filaments pubescent, shorter pair 1–2 mm, longer pair 3–4 mm; anther thecae oblong, ca. 1.5 mm. Ovary ca. 2 mm, glabrous except for a few trichomes at tip. Capsule oblong, ca. 10 × 3 mm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3 × 2 mm, compressed, pubescent; areola small. Fl. Aug–Sep, fr. Nov.

• Forests; 1200–2300 m. Yunnan.

14. *Strobilanthes oligantha* Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 124. 1866.

少花马蓝 shao hua ma lan

Acanthopale oligantha (Miquel) C. B. Clarke ex S. Moore; *Championella oligantha* (Miquel) Bremekamp.

Herbs 40–50 cm tall, isophyllous. Stems 4-angled, sulcate, sparsely and retrorsely white hairy. Petiole 3.5–4 cm, thinly pilose; leaf blade broadly ovate to elliptic, 4–7(–10) × 2–4 cm, both surfaces with prominent white cystoliths, abaxially thinly pilose on veins, adaxially glabrous to thinly pubescent, secondary veins 4–6 on each side of midvein, base broadly cuneate, margin remotely serrate, apex acuminate. Inflorescences short spikes, elongating to ca. 4 cm in fruit, sometimes reduced to a single flower pair; bracts leaflike; outer bracts ca. 1.5 cm; inner bracts smaller, densely covered with white large-celled trichomes; bracteoles linear-spatulate, ca. 1 cm, densely covered with white large-celled trichomes. Flowers imbricate on rachis. Calyx ca. 8 mm, subequally 5-lobed almost to base; lobes linear, subequaling bracteoles, inside apically with trichomes. Corolla bluish purple, 3–3.5 cm, usually bent, outside sparsely pubescent on lobes, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for ca. 1.5 cm then gradually widened to ca. 1.3 cm at mouth, expanded part campanulate and ca. 2.5 cm; lobes ca. 5 mm, subequal. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 5 mm, pilose; anther thecae oblong, ca. 2 × 1 mm; pollen type 10. Ovary pubescent at tip; style ca. 3.2 cm, pilose. Capsule narrowly obovoid, ca. 1 cm, pubescent at tip, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, pubescent. Fl. Jul–Sep, fr. Oct–Nov. $2n = 60$.

Forests, shaded moist grasslands; 100–800 m. Anhui, Fujian, Jiangxi, Zhejiang [Japan, Korea].

15. *Strobilanthes austrosinensis* Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 470. 2010.

华南马蓝 hua nan ma lan

Herbs to 50 cm, perennial, drying a distinct dark green color, isophyllous. Stems basally procumbent and rooting at nodes but eventually ascending, sulcate, bifariously pubescent especially apically, with reflexed whitish large-celled trichomes. Petiole 0–2 cm, bifariously hirsute with reflexed whitish large-celled trichomes; leaf blade elliptic to suborbicular, 2–8 × 1–4.5 cm, abaxially pilose along veins, adaxially pilose and hirsute especially toward base and densely covered

with white cystoliths, secondary veins 3–5 on each side of midvein, base attenuate, margin serrate but becoming subentire toward base, apex acute to obtuse. Inflorescences terminal, headlike spikes, 1–2 cm, often elongating at maturity, leafy, few flowered; rachis densely whitish pilose; bracts shortly petiolate, leaflike, broadly obovate-spatulate, 1.5–1.8 × 0.5–0.8 cm, abaxially densely covered with whitish multicellular trichomes toward base, adaxially subglabrous, margin basally entire and apically 1–3-dentate, apex rounded to obtuse; bracteoles spatulate, 8–11 × 1–2.5 mm, abaxially toward base densely covered with whitish multicellular large-celled trichomes, adaxially whitish pilose. Calyx 1–1.2 cm, 5-lobed almost to base; lobes oblong-lanceolate, outside pilose, inside subglabrous, midvein prominent, margin ciliate with thick white apically spreading cilia, apex obtuse. Corolla bluish purple, funnel-shaped, 2.2–2.8 cm, ventricose, straight to slightly curved, outside pilose when young but glabrescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for 1.2–1.5 cm then gradually widened to ca. 1.5 cm at mouth; lobes ovate-elliptic, ca. 5 mm. Stamens 4, included; filaments hirsute, shorter pair ca. 6 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 1.2 × 0.4 mm; pollen type 10. Ovary ovoid, ca. 2 mm, glabrous except for comose tip; style ca. 1.5 cm, hirsute; stigma unequally 2-cleft. Capsule oblong, 9–10 × ca. 3 mm, glabrous except for pilose tip and along suture, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, densely pilose; areola small, glabrous. Fl. Jul–Sep, fr. Oct–Nov.

• Thickets, forest margins; 100–1500 m. Guangdong, Guangxi, Hunan, Jiangxi.

16. *Strobilanthes sarcorrhiza* (C. Ling) C. Z. Zheng ex Y. F. Deng & N. H. Xia, *Novon* 17: 154. 2007.

菜头肾 *cai tou shen*

Championella sarcorrhiza C. Ling, *Acta Phytotax. Sin.* 13(3): 93. 1975.

Herbs 20–40 cm tall, unbranched, isophyllous. Rhizomes swollen, fleshy. Stems 4-angled, sulcate, densely pubescent. Petiole 0–3 mm; leaf blade oblong-lanceolate, 4–18 × 1.5–3 cm, abaxially pubescent along veins, adaxially glabrous and densely covered with acerose cystoliths, secondary veins 5–9 on each side of midvein, base narrowly cuneate, margin dentate to undulate, apex acuminate. Inflorescences terminal, subcapitate spikes, 2–4(–5) cm, 4–10-flowered; rachis pubescent; bracts leaflike, obovate-elliptic, 1–2 × 0.3–1 cm, glabrous; bracteoles linear-lanceolate, ca. 8 mm, glabrous except for large-celled trichomes on margin, abaxially densely covered with white clavate cystoliths. Calyx ca. 1 cm, 5-lobed almost to base; lobes linear, unequal, glabrous except for large-celled trichomes on margin, outside densely covered with white clavate cystoliths. Corolla purple, funnel-shaped, 3.5–4.5 cm, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 7 mm then gradually widened to ca. 1.5 cm at mouth; lobes oblong, ca. 4 × 3 mm, subequal, apex emarginate. Stamens 4, included; filaments pilose, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 1.5 mm; pollen type 3. Ovary glabrous; style filiform, ca. 3.2 cm, pubescent. Capsule glabrous, 4-

seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, densely pubescent. Fl. Aug–Sep, fr. Nov.

• Forests in valleys; 200–600 m. Zhejiang.

This species is used medicinally.

17. *Strobilanthes procumbens* Y. F. Deng & J. R. I. Wood, *J. Trop. Subtrop. Bot.* 18: 476. 2010.

金佛山马蓝 *jin fo shan ma lan*

Herbs to 70 cm tall, perennial, isophyllous. Stems at first procumbent and rooting at nodes then erect, sulcate, densely pubescent with multicellular trichomes. Petiole 3–11 mm, sulcate, densely pubescent with multicellular trichomes; leaf blade ovate to rhomboidal, 0.8–3 × 0.3–2 cm, both surfaces pubescent with multicellular trichomes, adaxially with numerous cystoliths, secondary veins 3–5 on each side of midvein, abaxially elevated, and adaxially impressed, base cuneate and slightly decurrent onto petiole, margin crenate, apex acute. Inflorescences terminal, subcapitate spikes, ca. 1 cm; bracts leaflike, oblanceolate, 4–12 × 2–4 mm, apically diminishing in size, abaxially pubescent, adaxially pubescent with white to slightly yellowish multicellular trichomes, margin entire or with 1 or 2 teeth and silky ciliate, apex obtuse; bracteoles linear-spatulate, ca. 5 × 1 mm, indumentum as for bracts. Calyx subequally 5-lobed to base, white pilose; lobes linear, apex obtuse. Corolla white, funnel-shaped, 2.8–3.3 cm, straight to slightly curved, outside pubescent especially on lobes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 1 mm wide for ca. 6 mm then gradually widened to ca. 1 cm at mouth; lobes oblong, ca. 2 × 2 mm. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 4 mm, pubescent; anther thecae oblong, ca. 1.3 mm; pollen type ?4. Ovary glabrous except for comose tip; style ca. 1 cm, glabrous. Capsule oblong, ca. 0.8 cm, glabrous except for comose tip, 4-seeded. Seeds elliptic in outline, ca. 1 × 1 mm, pubescent; areola small. Fl. Aug–Sep, fr. Nov.

• Streamsides; 800–1000 m. Chongqing (Nanchuan).

18. *Strobilanthes lihengiae* Y. F. Deng & J. R. I. Wood, *Bot. J. Linn. Soc.* 150: 379. 2006.

李恒马蓝 *li heng ma lan*

Herbs to 40 cm tall, perennial, isophyllous. Stems rounded to slightly sulcate, apparently ascending, bifariously pubescent to subglabrous. Petiole 0.2–4 cm, pilose with large white multicellular trichomes; leaf blade ovate to ovate-elliptic, 1.5–11 × 0.5–6 cm, both surfaces pilose with large-celled trichomes especially on veins but adaxially sparser, secondary veins 4 on each side of midvein, base cuneate, margin dentate to crenate, apex shortly acuminate. Inflorescences terminal on main stem and on small axillary branchlets, headlike spikes, very compact; bracts obovate, 8–11 × 6–9 mm, shortly and densely greenish tomentose and also pilose with long large-celled white gland-tipped and non-glandular trichomes, margin entire, apex rounded; bracteoles oblong-oblanceolate, ca. 6 × 1.5–2 mm, margin long ciliate. Calyx subequally 5-lobed to ca. 1 mm from base; lobes green-tipped, lanceolate-oblong, 8–9 × ca. 1.3 cm, exceeding bracteoles, margin long ciliate, apex obtuse. Corolla

with a whitish tube base and blue apical part of tube and lobes, 3.2–4 cm, ventricose, sparsely pilose on lobes; tube basally cylindrical and ca. 1 mm wide for 8–10 mm then bent and expanded gradually to ca. 1.5 cm wide at mouth; lobes ovate, ca. 5 × 5 mm, apex acute. Stamens 4, included; filaments coarsely pilose, shorter pair ca. 3 mm, longer pair ca. 5 mm; anther thecae narrowly oblong, ca. 3 × 0.5 mm; pollen type 3. Ovary villous; style 2.5–3 cm, basally sparsely pilose. Capsule cylindrical, ca. 12 × 3 mm, comose, 4-seeded. Seeds ovate-elliptic in outline, ca. 2.5 × 2 mm, pilose. Fl. Nov–Dec.

• Disturbed evergreen broad-leaved forests; ca. 2000 m. Yunnan (Tengchong).

19. *Strobilanthes esquirolii* H. Léveillé, Repert. Spec. Nov. Regni Veg. 12: 18. 1913.

白头马蓝 bai tou ma lan

Pyrrothrix heterochroa (Handel-Mazzetti) C. Y. Wu & C. C. Hu; *Strobilanthes heterochroa* Handel-Mazzetti; *S. leucocephala* Craib; *Tetragoga angustiphylla* Q. H. Chen; *T. esquirolii* (H. Léveillé) E. Hossain.

Subshrubs 0.5–2 m tall, much branched, anisophyllous. Stems 4-angled, basally glabrescent, apically rust-colored retrorsely setose. Petiole 1–3 cm, hispid-pilose; leaf blade ovate-elliptic to oblong-elliptic, 4–17 × 2–8 cm, smaller of pair ca. 3/4 size of larger one, roughly hirsute, abaxially paler, adaxially with prominent cystoliths, secondary veins 7–10 on each side of midvein, abaxially prominent, and adaxially impressed, base cuneate and attenuate, margin serrulate and ciliate, apex acute to caudate. Inflorescences terminal, heads, often yellowish, 2–3 × ca. 2 cm, 8–10-flowered; rachis densely white sericeous with gland-tipped trichomes; bracts oblong-lanceolate, 1–3 × 0.5–0.7 cm, outer ones longer with caudate tips giving inflorescences an eared appearance, inner ones smaller, indumentum variable, white sericeous, with gland-tipped or non-glandular trichomes, and apically often becoming brownish; bracteoles oblanceolate, 7–9 × ca. 2 mm, abaxially basally white sericeous, trichomes apically often slightly rust-colored. Flowers imbricate on rachis. Calyx 7–10 mm, 5-lobed almost to base; lobes linear-oblancoolate, densely white sericeous toward base but slightly rust-colored toward apex, apex acute. Corolla violet, 3–3.5 cm, curved, ventricose, outside densely white pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 4 mm wide for ca. 6 mm then gradually widened to ca. 1 cm at mouth; lobes ovate, ca. 4 × 5 mm, apex obtuse. Stamens 4, included; shorter filament pair ca. 4 mm, glabrous; longer filament pair ca. 7 mm, white pilose; anther thecae oblong, ca. 3 × 1 mm; pollen type 3. Ovary densely white pilose; style ca. 2.8 cm, white pilose. Capsule oblong, 7–10 mm, apically white pilose, 4-seeded. Seeds ovate in outline, ca. 3.5 × 2 mm, densely pubescent; areola small. Fl. Sep–Dec.

Mountain slopes; 200–800 m. Guizhou, Yunnan [Laos, Thailand, Vietnam].

20. *Strobilanthes hossei* C. B. Clarke, Bot. Jahrb. Syst. 41: 67. 1907.

红毛马蓝 hong mao ma lan

Championella fulvihilspida (D. Fang & H. S. Lo) C. C. Hu & C. Y. Wu; *Pyrrothrix hossei* (C. B. Clarke) C. Y. Wu & C. C. Hu; *P. rufohirta* (C. B. Clarke ex W. W. Smith) C. Y. Wu & C. C. Hu; *Strobilanthes fulvihilspida* D. Fang & H. S. Lo; *S. rufohirta* C. B. Clarke ex W. W. Smith.

Herbs or subshrubs 20–30(–100) cm tall, much branched, anisophyllous. Stems slender, erect, 4-angled, basally glabrescent, apically reddish brown setose. Petiole 1.5–2.5 cm, densely reddish setose; leaf blade ovate to ovate-lanceolate, 8–9 × 3.5–4 cm, both surfaces reddish brown setose on veins, abaxially whitish, adaxially dark green, cystoliths absent or obscure, secondary veins ca. 5 on each side of midvein, base broadly cuneate to subrounded, margin crenate, apex acuminate. Inflorescences axillary, spikes, 2–4 cm; rachis densely reddish setose; bracts spatulate, 1.3–1.6 × ca. 0.3 cm, persistent, basal claw pale reddish setose, expanded apex green and leaflike; bracteoles linear-spatulate, 0.8–1.2 cm, reddish setose. Calyx ca. 1.3 cm, 5-lobed almost to base; lobes linear-spatulate, reddish setose. Corolla pale blue, 4–5 cm, straight, outside puberulent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm then gradually widened to ca. 1.2 cm at mouth; lobes orbicular, 6–7 mm in diam. Stamens 4, included; filaments white villous, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2 × 1 mm; pollen type 3. Capsule light brown, fusiform, ca. 1 cm, gland-tipped pubescent, 4-seeded, apex apiculate. Seeds brown, ovate in outline, ca. 2 × 2 mm, compressed, pubescent, apex shortly apiculate; areola absent. Fl. Aug–Dec, fr. Nov–Feb.

Thickets, mountain slopes; 1000–1800 m. Guangxi, Yunnan [Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam].

21. *Strobilanthes torrentium* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 188. 1922.

急流马蓝 ji liu ma lan

Subshrubs to 1 m tall, isophyllous or slightly anisophyllous. Stems dark green, erect, 4-angled, sulcate, bifuriously pubescent. Petiole 0.5–3 cm, pubescent and slightly hispid; leaf blade ovate to elliptic, 3–13 × 1.5–5.5 cm, abaxially densely yellow pilose along veins, adaxially sparsely pubescent, hispid, and with numerous cystoliths, secondary veins 5–7 on each side of midvein, base narrowly cuneate and decurrent onto petiole, margin serrate, apex acuminate and slightly falcate. Inflorescences axillary or terminal, headlike spikes, 1.5–3 cm, very compact, densely covered with long silky rufous trichomes; bracts imbricate, somewhat variable in size and shape; outer bracts leaflike, obovate to subrhombic, 1.5–1.7 × 0.5–0.7 cm, distinctly angled, densely villous, apex acute; inner bracts obovate, ca. 10 × 5 mm, angled, villous, apex subacute; bracteoles oblanceolate, ca. 7 mm, margin ciliate, apex obtuse. Calyx 1–1.1 cm, villous, 5-lobed to ca. 3 cm from base; lobes linear-oblong 7–8 × ca. 1 mm, with 2 slightly shorter than others, margin ciliate, apex obtuse. Corolla with a white tube and blue to mauve lobes, 3–4.5 cm, curved, outside sparsely pubescent on tube and on lobes, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for 8–10 mm then gradually widened to 1–1.2 cm at mouth; lobes ovate, ca. 3 × 5 mm, apex obtuse. Stamens 4, included; filaments pilose,

shorter pair ca. 2 mm, longer pair ca. 5 mm; anther thecae oblong, ca. 2.5 mm; pollen type 3. Ovary villous; style ca. 3.3 cm, basally glabrous, apically pubescent. Capsule oblong, ca. 9 mm, pilose at tip, 4-seeded. Seeds unknown. Fl. Aug–Nov.

Forests by streams; 1900–2300 m. Yunnan [India, Myanmar].

22. *Strobilanthes anamitica* Kuntze, Revis. Gen. Pl. 2: 498. 1891.

海南马蓝 hai nan ma lan

Championella maclurei (Merrill) C. Y. Wu & H. S. Lo; *Strobilanthes maclurei* Merrill.

Herbs 50–100 cm tall, isophyllous. Stems reddish, stout, erect or procumbent and rooting at nodes, hirsute when young, glabrescent. Petiole 1–2 cm; leaf blade oblong-ovate, 3–13 × 1.5–5.5 cm, both surfaces golden to brown hirsute, adaxially densely covered with cystoliths, secondary veins ca. 5 on each side of midvein, base cuneate to subrounded, margin crenulate, apex acuminate to shortly acuminate. Inflorescences axillary or terminal, headlike spikes, 1–3 cm, very compact, elongated after flowering; bracts obovate, ca. 1 cm, brown hirsute, pinnately veined, apex reflexed; bracteoles spatulate-linear, ca. 10 × 1 mm, abaxially hirsute on apical half, adaxially subglabrous, margin ciliate. Calyx 6–8 mm, hirsute, 5-lobed almost to base; lobes linear, ca. 1 mm wide, outside hirsute on apical half, margin ciliate. Corolla light blue or white, ca. 3 cm, outside pubescent on tube, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 0.2 mm wide for ca. 1.2 cm then gradually widened to ca. 1 cm at mouth; lobes oblong, ca. 6 mm. Stamens 4, included; filaments pilose, shorter pair ca. 3 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2 × 1 mm; pollen type 2. Ovary pubescent at tip; style ca. 2.5 cm, hirsute. Capsule light brown, ca. 7 mm, pubescent at tip, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, pubescent. Fl. Sep–Jan, fr. Dec–Mar.

Forests, on rocks by streams; 400–1800 m. Guangxi, Hainan, Yunnan [Vietnam].

23. *Strobilanthes yunnanensis* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 164. 1912.

云南马蓝 yun nan ma lan

Pteracanthus hygrophiloides (C. B. Clarke ex W. W. Smith) H. W. Li; *P. hygrophiloides* var. *brachytrichus* (Handel-Mazzetti) C. Y. Wu; *P. mekongensis* (W. W. Smith) C. Y. Wu & C. C. Hu; *P. yunnanensis* (Diels) C. Y. Wu & C. C. Hu; *Strobilanthes hygrophiloides* C. B. Clarke ex W. W. Smith; *S. hygrophiloides* var. *brachytricha* Handel-Mazzetti; *S. hygrophiloides* var. *subnuda* Benoist; *S. limprichtii* Diels; *S. mekongensis* W. W. Smith.

Subshrubs 0.5–2.5 m tall, much branched, isophyllous. Stems 4-angled, bifariously whitish pubescent, sometimes glabrescent. Petiole 2–4 cm, whitish pubescent; leaf blade ovate, elliptic, or elliptic-ovate, 3–11 × 2–5 cm, abaxially pale green and sparsely pubescent, adaxially dark green and pubescent, cystoliths abundant on both surfaces, secondary veins 4–7 on each side of midvein, base narrowly cuneate and decurrent onto petiole, margin crenate-serrate, apex acuminate and sometimes falcate. Inflorescences axillary or terminal, subcapitate spikes,

rarely reduced to a single flower; peduncle 0–4 mm, densely white pubescent; bracts persistent, hirsute; outermost sterile bracts leaflike, petiolate, lanceolate to ovate-lanceolate, 1.5–2.5 × 0.3–0.4 cm; inner floral bracts linear-oblong, 1.2–1.6 cm, with 1 reddish brown vein; bracteoles linear to oblanceolate, ca. 10 × 2 mm, pilose, apex obtuse. Flowers usually only one sterile per node. Calyx 1.2–1.6 cm, 5-lobed almost to base; lobes linear-lanceolate, 11–15 × 1–1.5 mm, subhyaline, pilose especially on midvein, margin ciliate, apex finely acuminate. Corolla pale blue to pinkish, 3.5–4.5 cm, straight, outside densely white pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and 8–9 mm wide for 1–1.5 cm then gradually widened to ca. 2 cm at mouth; lobes orbicular, 6–8 mm in diam. Stamens 4, included; filaments pilose, shorter pair ca. 2 mm, longer pair 4–7 mm; anther thecae oblong, ca. 4 × 1 mm; pollen type 3. Ovary whitish comose; style 2.8–3.4 cm, sparsely pilose. Capsule oblong, 11–13 × ca. 2.5 mm, apically sparsely gland-tipped pubescent, 4-seeded. Seeds ovate in outline, 2.5–3.5 × 2–2.5 mm, densely appressed pilose. Fl. Jul–Sep, fr. Oct–Nov.

• Moist open shady places in thickets; 800–2800 m. Gansu (Wenxian), Sichuan, Xizang (Médog, Zayü), Yunnan.

24. *Strobilanthes fengiana* Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 481. 2010.

冯氏马蓝 feng shi ma lan

Subshrubs to 50 cm tall, perennial, weakly anisophyllous. Stems 4-angled, sulcate, glabrescent. Petiole 1–2 cm, sulcate, bifariously pubescent; leaf blade ovate, smaller of pair 6–8 × 3–4 cm and larger one 10–14 × 4–6 cm, abaxially glabrous except pilose along midvein, adaxially glabrous and with prominent cystoliths, secondary veins 4–7 on each side of midvein, base rounded to broadly cuneate, margin undulate and ciliate, apex acuminate. Inflorescences terminal, subcapitate spikes, 1.5–3 cm; rachis pubescent; bracts lanceolate, 10–15 × ca. 2 mm, abaxially glabrescent, adaxially sparsely pubescent; bracteoles lanceolate, 8–10 × ca. 2 mm, abaxially glabrous, adaxially densely covered with multicellular large-celled trichomes. Calyx ca. 1.2 cm, 5-lobed almost to base; lobes linear-spatulate, outside apically covered with multicellular large-celled trichomes, margin ciliate with multicellular large-celled trichomes, apex acute. Corolla purple, 3–3.5 cm, outside pilose with large-celled trichomes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1.5 cm then bent to ca. 90° above middle and gradually widened to ca. 1.3 cm at mouth; lobes rounded. Stamens 4, included; filaments pilose, shorter pair ca. 6 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 2 mm. Capsule oblong, 12–14 × 3–4 mm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3 × 2 mm, pubescent; areola small. Fl. Sep–Dec, fr. Nov–Feb.

• Forests; 1200–1800 m. Yunnan (Xichou).

25. *Strobilanthes lamium* C. B. Clarke ex W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 195. 1918.

野芝麻马蓝 ye zhi ma ma lan

Pteracanthus lamium (C. B. Clarke ex W. W. Smith) C. Y. Wu & C. C. Hu.

Herbs 30–80 cm tall, unbranched, anisophyllous. Stems 4-angled, sulcate, basally glabrescent, apically whitish gland-tipped pubescent. Leaves apically denser; petiole 3–10 mm, hirsute; leaf blade ovate to ovate-lanceolate, 4–5 × 2.5–3 cm, both surfaces with very small conspicuous cystoliths, abaxially paler, sparsely pilose, and setose along veins, adaxially dark green, sparsely hirsute, and yellowish brown setose along midvein, secondary veins 7 or 8 on each side of midvein, base broadly cuneate and decurrent onto petiole, margin coarsely serrate, apex acute. Inflorescences terminal, subcapitate spikes, 3–5 cm, 4–8-flowered; bracts oblong to lanceolate, resembling reduced leaves, 1.4–1.6 × 0.6–0.7 cm, persistent, abaxially hirsute especially on veins; bracteoles narrowly oblong-elliptic, ca. 1.2 cm, abaxially gland-tipped pilose. Flowers imbricate on rachis. Calyx ca. 1.1 cm, gland-tipped pilose, 5-lobed almost to base; lobes linear-lanceolate, subequal, pilose, apex acute. Corolla purple, ca. 3.5 cm, bent at mouth, outside sparsely pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 6 mm then gradually widened to ca. 1 cm at mouth; lobes orbicular, ca. 6 mm in diam. Stamens 4, included; filaments densely pilose, shorter pair ca. 5 mm, longer pair ca. 7 mm; anther thecae oblong, ca. 2.3 × 1.3 mm, erect. Ovary pilose at tip; style pilose. Capsule not seen. Fl. Jul–Aug.

- Forests, slopes; 800–1500 m. Chongqing, Hubei, Hunan.

26. *Strobilanthes cyphantha* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 162. 1912.

弯花马蓝 wan hua ma lan

Pteracanthus cyphanthus (Diels) C. Y. Wu & C. C. Hu.

Subshrubs 45–60 cm tall. Stems 4-angled. Petiole 2–5 cm; leaf blade ovate, 3–7 × 1.5–4.5 cm, both surfaces pilose, adaxially with numerous obscure cystoliths, secondary veins 6–8 on each side of midvein, base decurrent onto petiole, margin serrate, apex acute. Inflorescences terminal or in apical leaf axils, subcapitate, dense, sessile or with peduncle to 5 mm, white pilose; outer sterile bracts leaflike; inner floral bracts elliptic, ca. 12 × 5 mm, white pilose, margin dentate and ciliate; bracteoles linear, ca. 16 × 1 mm, thinly pilose. Calyx 1–1.3 cm, 5-lobed almost to base; lobes linear, ca. 11 × 1 mm, subequal, thinly pilose. Corolla blue, 3–4 cm, strongly bent and ventricose, outside thinly pilose, inside pubescent on lobes and glabrous in tube except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1 cm then bent to ca. 90° at middle and widened to ca. 1.2 cm at mouth; lobes oblong, ca. 5 × 4 mm. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 3 mm, glabrous except for a few trichomes basally; anther thecae oblong, ca. 2 × 1–1.5 mm; pollen type 3. Ovary comose; style 2.7–3.2 cm, pubescent. Capsule ca. 1.4 cm, pilose at tip, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, densely covered with appressed trichomes. Fl. Jul–Oct, fr. Nov–Dec.

- Mixed forests; 1200–3200 m. Gansu (Wenxian), Sichuan, SE Xizang, Yunnan.

“*Strobilanthes curviflorus* [sic!] C. B. Clarke” (C. Y. Wu, Index Fl. Yunnan. 2: 1685. 1984) belongs here but was not validly published because it was merely cited as a synonym (*Vienna Code*, Art. 34.1(c)).

27. *Strobilanthes strigosa* D. Fang & H. S. Lo, Guihaia 17: 36. 1997.

糙毛马蓝 cao mao ma lan

Subshrubs 30–60 cm tall, isophyllous. Stems black when dry, 4-angled, sulcate, bifariously pubescent and hirsute. Petiole 5–12 mm, pubescent and hirsute; leaf blade elliptic to broadly ovate, 3.5–8 × 2–5 cm, both surfaces sparsely hispid pilose and with conspicuous cystoliths, secondary veins ca. 7 on each side of midvein and prominent, base cuneate to attenuate, margin serrate, apex acute. Inflorescences terminal or in apical leaf axils, spikes, 2–3 cm; bracts elliptic, 9–10 × 5–6 mm, persistent, pinnately veined, margin gland-tipped ciliate, apex acute; bracteoles oblanceolate, ca. 9 mm, densely covered with linear cystoliths, margin gland-tipped ciliate. Flowers imbricate on rachis. Calyx ca. 1.2 cm, 5-lobed to base; lobes falcately spatulate, ca. 2 mm wide, unequal, margin gland-tipped ciliate. Corolla purplish, ca. 4.5 cm, slightly bent, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical for ca. 1.5 cm then gradually widened to ca. 1 cm at mouth; lobes ovate, ca. 7 mm, apex rounded. Stamens 4, included; shorter filament pair ca. 2.5 mm, glabrous; longer filament pair ca. 5 mm, pilose; anther thecae oblong, ca. 2 × 1.3 mm; pollen type 4. Ovary comose; style ca. 2.8 cm, sparsely pilose. Capsule not seen. Fl. Dec.

- Limestone slopes; 400–600 m. Guangxi (Jingxi).

Strobilanthes strigosa is a poorly understood species whose placement is uncertain.

28. *Strobilanthes longiflora* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 94. 1922.

长花马蓝 chang hua ma lan

Championella longiflora (Benoist) C. Y. Wu & C. C. Hu.

Herbs to 50 cm tall, isophyllous. Stems sulcate, glabrous. Petiole 2–4 mm, pubescent; leaf blade broadly lanceolate to ovate, to ca. 10 × 5 cm, glabrous, cystoliths very prominent on both surfaces, secondary veins 3–5 on each side of midvein, base cuneate, margin minutely crenulate, apex acuminate. Inflorescences terminal or from apical axils, spikes, 0–4 cm, 8–12-flowered but sometimes reduced to a single flower in leaf axils; bracts oblanceolate-spatulate, 10–13 × 1.5–3 mm, sparsely pilose, apex entire to weakly 3-lobed; bracteoles oblong, ca. 6 × 1 mm, pilose with a comose apex, apex obtuse. Calyx ca. 1 cm, 5-lobed almost to base; lobes linear, ca. 9 × 1.5 mm, comose. Corolla blue, funnel-shaped, ca. 5 cm, strongly bent, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm then gradually widened to ca. 9 mm at mouth; lobes ovate, ca. 4 × 3 mm, apex obtuse. Stamens 4, included; filaments pilose, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2.5 × 1.2 mm; pollen type 15. Ovary glabrous but pubescent at tip; style sparsely white pilose; stigma linear. Capsule oblong-fusiform, ca. 8 × 2 mm, glabrous apart from a few apical trichomes, 4-seeded. Fl. Aug–Oct, fr. Nov–Dec.

- Thickets; 700–1500 m. Yunnan.

29. *Strobilanthes henryi* Hemsley, J. Linn. Soc., Bot. 26: 240. 1890.

南一笼鸡 nan yi long ji

Gutzlaffia anisandra (Benoist) Handel-Mazzetti; *G. anisandra* var. *drosothyrsa* Handel-Mazzetti; *G. forrestii* S. Moore; *G. henryi* (Hemsley) C. B. Clarke ex S. Moore; *G. lyi* (H. Léveillé) E. Hossain; *G. multiramosa* Handel-Mazzetti; *Paragutzlaffia henryi* (Hemsley) H. P. Tsui; *P. lyi* (H. Léveillé) H. P. Tsui; *Ruellia lyi* H. Léveillé; *Strobilanthes anisandra* Benoist.

Subshrubs to 70 cm tall, variable from hirsute to subglabrous, weakly anisophyllous. Stems slender, erect or ascending, 4-angled, much branched, villous to subglabrous. Petiole 0.5–3 cm; leaf blade ovate, ovate-elliptic, or subrhomboidal, 2–9 × 1.5–4.5 cm, both surfaces thinly to densely pilose, abaxially paler, adaxially with linear cystoliths, secondary veins 5 or 6 on each side of midvein, base broadly cuneate, slightly oblique, and usually decurrent onto petiole, margin crenulate, apex acute. Inflorescences terminal, spikes, usually 3–8 cm; bracts at base of spike resembling sessile reduced leaves; floral bracts oblong to spatulate, 6–7 × 1–2 mm, persistent, abaxially gland-tipped pubescent to subglabrous; bracteoles linear, ca. 7 × 0.8 mm, abaxially gland-tipped pubescent to subglabrous. Flowers paired, varying considerably in density, basally distant on rachis but apically becoming imbricate. Calyx 8–11 mm, subequally 5-lobed almost to base; lobes linear, 6–7 mm, outside gland-tipped pubescent to subglabrous. Corolla light purple, blue, or white, funnel-shaped, 1.7–2.3 cm, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for 3.5–6 mm then bent and gradually widened to ca. 1 cm at mouth; lobes orbicular, ca. 2 mm in diam., spreading. Fertile stamens 2, staminodes 2; filaments ca. 3.5 mm, pubescent; anther thecae ovoid-oblong, exerted; pollen type 15. Ovary oblong, glabrous but with a few apical glands; style ca. 2 cm, glabrous. Capsule oblong, 7–10 mm, glabrous apart from a few apical glands, 4-seeded. Seeds suborbicular in outline, ca. 2 × 2 mm, densely villous; areola small. Fl. Jan, Apr, Jul–Oct.

• Mountain slopes; 1000–2800 m. Guizhou, Hubei, Hunan, Sichuan, SE Xizang, Yunnan.

30. *Strobilanthes cyclus* C. B. Clarke ex W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 192. 1918.

环毛马蓝 huan mao ma lan

Subshrubs 40–60 cm tall, isophyllous, whole plant with hispid trichomes. Stems erect or suberect, with whitish multicellular trichomes. Petiole 2–5 mm, densely pilose; leaf blade broadly ovate to suborbicular, 2.5–5.5 × 2–4.5 cm, abaxially pale green and hirsute along veins, adaxially dark green, densely hirsute, and with prominent linear cystoliths, secondary veins 4 or 5 on each side of midvein, base broadly cuneate to subrounded, margin crenate to sometimes subentire, apex rounded to acute. Inflorescences axillary or terminal, capitate spikes, 1–3 cm, shortly pedunculate; bracts narrowly oblong-elliptic, 10–12 × 5–6 mm, densely pilose; bracteoles oblong, ca. 7 × 2 mm, densely pilose on apical half, apex obtuse. Calyx ca. 7 mm, outside pilose, weakly 2-lipped; lobes linear-oblong;

lower 2 lobes distinct to base; upper 3 lobes fused in their basal half, with central lobe slightly longer. Corolla blue, 2–2.5 cm, substraight, outside glabrous except for pubescence on lobes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1.2 cm then gradually widened to ca. 1 cm at mouth; lobes suborbicular, ca. 5 mm in diam. Stamens 4; filaments glabrous, shorter pair ca. 3 mm and included, longer pair ca. 5 mm and exerted; anther thecae oblong, ca. 2.2 × 1.3 mm; pollen type 17. Ovary comose; style ca. 2 cm. Capsule ellipsoid, ca. 7 × 3.5 mm, pilose at tip, 2-seeded with basal retinacula sterile. Seeds ovate to suborbicular in outline, ca. 1 mm, flattened, pubescent; areola small but prominent. Fl. Aug.

• Forests; 1800–2300 m. Yunnan.

31. *Strobilanthes serrata* J. B. Imlay, Bull. Misc. Inform. Kew 1939: 117. 1939.

齿叶马蓝 chi ye ma lan

Gutzlaffia glandulosa Lace.

Subshrubs 50–100 m tall, perennial, erect, slightly anisophyllous. Stems sulcate, glabrous or with a few crisped trichomes. Petiole 0.5–7 cm, diminishing in length apically on stems, glabrous or sparsely pubescent; leaf blade ovate to oblong-ovate, 5–12 × 4–6 cm, abaxially uniformly violet to light green and glabrous except for pubescence along veins, adaxially green variegated with white patches and glabrous, secondary veins 7–9 on each side of midvein, base gradually narrowed and then ± decurrent to 2 cm onto petiole, margin coarsely serrate, apex acuminate. Inflorescences from apical leaf axils, simple or branched pedunculate spikes, commonly forming a terminal panicle of spikes; spikes 2–7 cm, densely gland-tipped pilose; peduncle of panicles 2–10 cm, subglabrous to thinly pubescent; rachis and branches densely gland-tipped pilose; bracts oblong-ovate to oblong-obovate, 3–4 × 1.5–2.5 mm, persistent, densely gland-tipped pilose, apex obtuse; bracteoles oblong to obovate, 3–4 × 1–1.5 mm, abaxially densely gland-tipped pilose, adaxially glabrous but densely covered with white cystoliths, apex obtuse. Flowers in opposite pairs, basally 1–2 cm apart on rachis, clearly separate all along spike except at very apex. Calyx 5–6 mm, subequally 5-lobed to base; lobes oblong, outside densely gland-tipped villous, inside glabrous and densely covered with white cystoliths. Corolla pale blue with a white tube, 2–2.6 cm, straight or slightly bent, outside sparsely to densely pilose with large-celled trichomes; tube basally cylindrical and narrow for 6–8 mm then widened to ca. 1 cm at mouth; lobes ovate, ca. 3 × 3 mm, apex obtuse. Fertile stamens 2; filaments ca. 4 mm, glabrous; anther thecae ca. 1.5 mm, included; pollen type 18. Ovary villous; style ca. 2 cm, glabrous. Capsule oblong, 5–7 × ca. 2 mm, silky pubescent, 4-seeded. Seeds ca. 2 × 2 mm, pubescent. Fl. Sep–Jan.

Partly shaded moist places in evergreen broad-leaved forests; 700–1600 m. Yunnan [Myanmar, Thailand].

32. *Strobilanthes tubiflos* (C. B. Clarke) J. R. I. Wood, Edinburgh J. Bot. 51: 264. 1994.

管花马蓝 guan hua ma lan

Strobilanthes petiolaris Nees var. *tubiflos* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 458. 1884.

Subshrubs of unknown habit. Stems 4-angled to subterete, sulcate, glabrous except for a few trichomes in grooves. Petiole 5–10 mm; leaf blade ovate-elliptic, 6.5–16 × 3.5–8 cm, abaxially paler, sometimes purplish, and glabrous except for appressed trichomes on midvein, adaxially glabrous and with prominent cystoliths, secondary veins 4–7 on each side of midvein, base cuneate and decurrent as a wing onto petiole, margin dentate, apex acuminate. Inflorescences terminal, branched spikes, 2–4 cm; rachis gland-tipped pilose; sterile bracts leaf-like, ovate, 9–10 × ca. 6 mm, with prominent cystoliths; floral bracts obovate, 5–6 × 2.5–3.5 mm, persistent, densely yellowish gland-tipped pubescent, cystoliths abaxially prominent, apex usually emarginate; bracteoles oblanceolate, ca. 5 × 1 mm, abaxially gland-tipped pubescent especially apically, apex obtuse. Calyx 7–8 mm, subequally 5-lobed almost to base; lobes oblong, ca. 1 mm wide, outside ciliate and apically gland-tipped pilose, inside glabrous. Corolla blue, 2–3 cm, curved, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 1 mm wide for ca. 3 mm then gradually widened to ca. 1 cm at mouth; lobes broadly ovate, ca. 2 × 3 mm, apex rounded. Fertile stamens 2, included; filaments glabrous, ca. 4 mm; anther thecae oblong, erect, ca. 2 × 0.8 mm; pollen type 3. Ovary oblong-ovate, ca. 1 mm, apically pilose; style ca. 2 cm, glabrous. Capsule oblong, ca. 6 × 2 mm, pubescent, 4-seeded. Seeds suborbicular in outline, ca. 1 × 1 mm, pubescent; areole prominent. Fl. Aug.

- Valleys, streamsides; 200–300 m. Xizang (Médog).

33. *Strobilanthes affinis* (Griffith) Terao ex J. R. I. Wood & J. R. Bennett, Kew Bull. 58: 134. 2003.

肖笼鸡 xiao long ji

Adenosma affinis Griffith, Not. Pl. Asiat. 4: 133. 1854; *Strobilanthes acrocephala* T. Anderson; *S. darrisii* H. Léveillé; *S. thirionnii* H. Léveillé; *Tarphochlamys affinis* (Griffith) Bremekamp; *T. darrisii* (H. Léveillé) E. Hossain.

Herbs to 60 cm tall, isophyllous. Stems 4-angled, sulcate, white pubescent with large-celled trichomes. Petiole 0.5–1.5 cm, pubescent; leaf blade ovate to ovate-elliptic, 3–8 × 2–4.5 cm, both surfaces sparsely strigose, abaxially yellowish green, adaxially dark green and densely covered with subulate cystoliths, secondary veins 5–7 on each side of midvein, base subrounded to cuneate and decurrent onto petiole, margin crenulate, apex acute. Inflorescences axillary or terminal, dense spikes, 2–6 cm; peduncle 0.5–2 cm, densely gland-tipped pubescent; sterile bracts sometimes present, sessile, suborbicular to ovate, 5–10 × 5–10 mm, strigose; floral bracts imbricate, broadly obovate, rhomboidal, or elliptic, 6–7 × 3–4 mm, gland-tipped pilose with large-celled trichomes, 5-veined, margin ciliate, apex sometimes reflexed; bracteoles oblong-linear, ca. 5 × 1.2 mm, slightly shorter than calyx, gland-tipped pubescent, margin ciliate. Calyx 5–7 mm, 5-lobed almost to base; lobes linear, one slightly longer than others, gland-tipped pubescent, 1-veined, margin ciliate, apex obtuse. Corolla purplish blue to violet, ca. 1.5 cm, curved, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 1

mm wide for ca. 7 mm then gradually widened to ca. 7 mm at mouth; limb somewhat 2-lipped, lower lip 3-lobed, upper lip 2-lobed; lobes orbicular, ca. 3 × 3 mm, unequal. Stamens 4; shorter filament pair ca. 4 mm, glabrous; longer filament pair ca. 6 cm, hirsute; anther thecae oblong, ca. 2 × 1.2 mm, strongly exerted; pollen type 14. Ovary pilose; style pilose, ca. 1.2 cm. Capsule oblong, 7–9 mm, pubescent, 4-seeded. Seeds brown, ovate to suborbicular in outline, ca. 1.5 × 1.5 mm, pubescent, glabrescent; areola small, glabrous. Fl. Sep–Nov.

Mountain slopes, thickets; 600–1300 m. Guangxi, Guizhou, Hunan, Yunnan [India, Myanmar, Vietnam].

Strobilanthes affinis is a very distinct species. Not only is the pollen unique but also the species is distinctive for having 4 exerted stamens and trichomes caducous on the seeds.

34. *Strobilanthes pinnatifida* C. Z. Zheng, J. Hangzhou Univ., Nat. Sci. Ed. 8: 431. 1981.

羽裂马蓝 yu lie ma lan

Pteracanthus pinnatifidus (C. Z. Zheng) C. Y. Wu & C. C. Hu.

Herbs to 40 cm tall, unbranched, isophyllous. Stems erect, brown hirsute. Petiole 1.5–2 cm, hirsute; leaf blade elliptic to ovate-elliptic, 3–13 × 1–5 cm, whitish appressed hirsute, secondary veins 6 or 7 on each side of midvein, base cuneate to attenuate and often decurrent onto petiole, margin coarsely dentate to deeply pinnatifid or lobed, apex acuminate to caudate. Inflorescences terminal, spikes, 5–9 cm; bracts spatulate-obovate, to 1.2 cm, pubescent; bracteoles linear, 1–1.5 cm, pubescent. Flowers distant on rachis. Calyx 1–1.5 cm, pubescent with gland-tipped trichomes, 5-lobed almost to base; lobes linear, equal. Corolla purplish blue, ca. 3.5 cm, ventricose, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1.2 mm then gradually widened to ca. 1 cm at mouth; lobes oblong, ca. 4 × 3.5 mm, apex emarginate to obtuse. Stamens 4, included; filaments pilose, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2 mm. Ovary oblong, glabrous; style ca. 3 mm, sparsely hirsute. Capsule oblong, sparsely pubescent, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, pubescent; areola small. Fl. Aug–Sep, fr. Nov.

- Forests in moist areas; 600–700 m. Zhejiang (Jingning, Qingyuan).

Strobilanthes pinnatifida is unique because of its pinnatifid or lobed leaves.

35. *Strobilanthes auriculata* Nees in Wallich, Pl. Asiat. Rar. 3: 86. 1832.

耳叶马蓝 er ye ma lan

Perilepta auriculata (Nees) Bremekamp; *P. edgeworthiana* (Nees) Bremekamp; *P. siamensis* (C. B. Clarke) Bremekamp; *Strobilanthes auriculata* var. *edgeworthiana* (Nees) C. B. Clarke; *S. auriculata* var. *siamensis* C. B. Clarke; *S. edgeworthiana* Nees; *S. siamensis* C. B. Clarke.

Subshrubs 0.5–2 m tall, much branched, weakly to strongly anisophyllous. Stems 4-angled, sometimes zigzag, gla-

brous or sparsely hirsute. Leaves sessile; leaf blade narrowly to broadly oblong-elliptic or oblong-oblongeolate, rarely ovate for small leaves, 2–20 × 1.5–6 cm, both surfaces sparsely pilose, abaxially pale green or reddish when young, adaxially green, secondary veins 12–15 on each side of midvein, base attenuate, cuneate, rounded, or auriculate, margin serrate to undulate, apex acuminate. Inflorescences axillary or terminal, spikes, 3–10 cm, sometimes branched; peduncle 2–4 cm, 4-angled, sulcate, bracteate; sterile bracts ovate, 0.8–2 × ca. 1.5 cm; floral bracts imbricate, broadly ovate to obovate-spatulate, 4–9 mm, often becoming recurved, persistent, densely villous and ciliate, apex usually apiculate but sometimes rounded or emarginate; bracteoles absent. Calyx 6–12 mm, gland-tipped pilose, 5-lobed almost to base; lobes linear, unequal with 2 slightly shorter than others, margin usually ciliate, apex subacute. Corolla pale purple to violet, funnel-shaped, 2.5–3 cm, curved, outside gland-tipped pilose on lobes, inside glabrous; tube basally cylindrical and narrow for ca. 4 mm then weakly to strongly bent, abruptly inflated, and widened to ca. 2.5 cm at mouth; limb weakly 2-lipped, lower lip 3-lobed, upper lip 2-lobed; lobes ca. 3 mm. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 4 mm; anther thecae oblong, ca. 1.5 × 1 mm; pollen type 3. Ovary glabrous; style ca. 3.2 cm. Capsule narrowly oblong-obovoid, 8–10 × ca. 2 mm, glabrous, 4-seeded, apex apiculate. Seeds ovate-suborbicular in outline, ca. 2 × 1.8 mm, pubescent; areola very small. Fl. Sep–Jan, fr. Jan–Feb.

Valleys; 300–1500 m. Guangxi, Yunnan [Bangladesh, India, Malaysia (Langkawi Island), Myanmar, Nepal, Pakistan, Thailand].

Strobilanthes auriculata var. *dyeriana* (Masters) J. R. I. Wood with leaf blade abaxially reddish rather than green is from Myanmar and Vietnam and is grown as a cultivated plant in Guangdong and Yunnan.

Strobilanthes auriculata is one of the few species of *Strobilanthes* that can be recognized in a sterile state with confidence on account of its sessile, sometimes auriculate, oblong to oblongeolate leaves. It is known to be pleistocenic in part of its range.

36. *Strobilanthes mogokensis* Lace, Bull. Misc. Inform. Kew 1915: 406. 1915.

卵叶马蓝 luan ye ma lan

Subshrubs to 60 cm tall. Stems 4-angled, sulcate, white gland-tipped pubescent, glabrescent. Petiole 0.6–1.5 cm, sulcate, pubescent; leaf blade variable in size and shape, basal ones broadly ovate and 4–9 × 2–5 cm, apicalmost ones cordate and 3–6 × 2–4.5 cm, both surfaces pubescent, secondary veins 4–6 on each side of midvein, base truncate to narrowly cuneate and slightly decurrent onto petiole, margin crenulate-serrate, apex acuminate to obtuse. Inflorescences terminal, spikes, 3–5 cm; rachis gland-tipped pubescent; bracts lanceolate-oblong, 11–12 × ca. 4 mm, abaxially yellowish gland-tipped pubescent, adaxially gland-tipped pubescent; bracteoles narrowly oblong-elliptic, 7–8 × ca. 1 mm, abaxially glabrous, adaxially gland-tipped pubescent. Calyx ca. 1 cm, outside pubescent, inside gland-tipped pubescent, 2-lipped, lower lip 2-lobed almost to base, upper lip 3-lobed to middle; lobes linear, ca. 1 mm wide. Corolla color not recorded, 2.5–3 cm, ventricose, curved, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm then

gradually widened to ca. 1 cm at mouth; lobes ovate, ca. 4 × 4 mm. Stamens 4, included; filaments glabrous, shorter pair ca. 3 mm, longer pair ca. 7 mm; anther thecae oblong, ca. 2 × 1.2 mm, erect; pollen type 9. Ovary white pilose at tip; style ca. 2.5 cm, apically hirsute. Capsule ca. 1 cm, pilose at tip, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, compressed, densely pilose. Fl. Oct–Dec, fr. Jan–Feb.

Streamsides; 600–800 m. Yunnan (Ruili) [Myanmar].

37. *Strobilanthes argentea* J. B. Imlay, Bull. Misc. Inform. Kew 1939: 121. 1939.

银毛马蓝 yin mao ma lan

Subshrubs to 50 cm tall, anisophyllous. Stems somewhat sulcate, bifariously pilose with large-celled trichomes, eventually glabrescent, basally woody. Petiole 0.2–4.3 cm, pilose; leaf blade ovate, 4–12 × 2–6 cm, smaller of pair ca. 1/2 size of larger one, both surfaces thinly or rather densely pilose with large white trichomes especially along veins, abaxially paler and with prominent cystoliths, base attenuate and ± decurrent onto petiole, margin crenulate to dentate, apex acute to shortly acuminate and commonly falcate. Inflorescences terminal, spikes, simple or branched, 1–4 cm, 2–10-flowered; peduncle 1–2.5 cm, pilose; rachis pilose; bracts oblong-lanceolate but basal ones spatulate, 7–10 × 1.5–3.5 mm, densely pilose with gland-tipped and non-glandular trichomes, apex acute; bracteoles oblong-lanceolate, 6–7 × 1.5–2 mm, densely pilose with gland-tipped trichomes, apex acute. Flowers paired, basally distant on rachis but apically becoming confluent. Calyx subequally 5-lobed almost to base; lobes lanceolate, abaxially pilose with gland-tipped and non-glandular trichomes, apex acute; central upper lobe longer than laterals. Corolla blue, 2.3–3.5 cm, ventricose and strongly bent, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then gradually widened to 7–8 mm at mouth; lobes broadly ovate, ca. 4 × 4 mm, apex rounded. Stamens 4, included; filaments glabrous, shorter pair 2–3 mm, longer pair 5–7 mm; anther thecae oblong, ca. 2 × 1 mm. Ovary pilose at tip; style ca. 2.5 cm, pilose. Capsule not seen. Fl. Oct–Nov.

Partly shaded and moist places along streams; 1100–1700 m. Yunnan [Thailand].

38. *Strobilanthes aprica* (Hance) T. Anderson in Bentham, Fl. Hongk. 262. 1861.

山一笼鸡 shan yi long ji

Gutzlaffia aprica Hance, Hooker's J. Bot. Kew Gard. Misc. 1: 143. 1849; *G. aprica* var. *glabra* (J. B. Imlay) H. S. Lo; *G. dielsiana* (W. W. Smith) S. Moore; *Phlebophyllum apricum* (Hance) Bentham; *Strobilanthes aprica* var. *glabra* J. B. Imlay; *S. cavaleriei* H. Léveillé var. *angustifolia* H. Léveillé; *S. dielsiana* W. W. Smith; *S. mairei* H. Léveillé.

Shrubs or perennial herbs, to 70 cm tall, isophyllous. Stems 4-angled, sulcate, retrorsely white hirsute. Petiole 5–10 mm, shortly white pubescent; leaf blade elliptic to oblong-elliptic, 2–7 × 1–3 cm, leathery, indumentum very variable, both surfaces usually scabrous-hispid but abaxially sometimes whitish

silky tomentose and occasionally glabrous except for pubescent midvein, secondary veins 5–7 on each side of midvein, base broadly cuneate, margin entire and scabrid to thinly ciliate, apex acute. Inflorescences axillary or terminal, short dense subcapitate spikes, becoming clustered in apicalmost leaf axils; spikes usually sessile but occasionally basal ones with a 0.5–3(–7) cm peduncle; bracts ovate-lanceolate, 13–15 × 3–5 mm, subleathery, abaxially and on margin with white multicellular trichomes, adaxially glabrous, apex long acuminate; bracteoles linear, 10–11 × ca. 1 mm, both surfaces covered with white cystoliths, abaxially and on margin sparsely pilose with multicellular trichomes, adaxially glabrous. Calyx 1–1.3 cm, 5-lobed for ca. 1/2 its length; lobes linear, lower 2 becoming distinct, upper 3 remaining connate, outside pubescent to subglabrous, inside glabrous, margin pilose. Corolla lilac with a white tube, funnel-shaped, 2.5–3.5 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 1 mm wide for 1.3–1.5 cm then abruptly inflated to ca. 1 cm in diam.; lobes suborbicular, ca. 5 × 5 mm, subequal, apex obtuse. Stamens 2, exerted; filaments ca. 1 cm, glabrous; anther thecae ellipsoid, ca. 2.5 mm; pollen type 11. Ovary white, narrowly oblong, pilose at tip; style ca. 3.5 cm, curved, pilose. Capsule oblong, 1–1.3 cm, glabrous except for a few trichomes at tip, 4-seeded. Seeds ovate in outline, ca. 2 mm, convex on both surfaces, pubescent; areola large, glabrous. Fl. Aug–Jan, fr. Sep–Feb.

Dry forests, montane thickets; below 2200 m. Guangdong, Guangxi, Guizhou, Jiangxi, Sichuan, Yunnan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

39. *Strobilanthes dalzielii* (W. W. Smith) Benoist in Lecomte, Fl. Indo-Chine 4: 679. 1935.

曲枝马蓝 qu zhi ma lan

Acanthopale dalzielii W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 193. 1919; *Championella dalzielii* (W. W. Smith) Bremekamp; *C. dalzielii* var. *glabra* Benoist; *Pteroptychia dalzielii* (W. W. Smith) H. S. Lo; *Strobilanthes dalzielii* var. *inaequalis* Benoist.

Subshrubs or perennial herbs, 40–100 cm tall, branched, strongly anisophyllous. Stems slender, erect, zigzag, slightly pubescent to subglabrous. Petiole 0–3 mm; leaf blade ovate to ovate-lanceolate, smaller of pair 2–5 × 1–2 cm and larger one 9–14 × 3–5 cm, abaxially glaucous and glabrous or sparsely pubescent along veins, adaxially green, glabrous, and with prominent cystoliths, secondary veins 3–5 on each side of midvein, base rounded but cordate for apical leaves, margin serrate, apex acuminate to acute and sometimes falcate. Inflorescences axillary or terminal, spikes, 2–5 cm, 2–5-flowered; rachis usually zigzag, sparsely white puberulent; bracts linear-lanceolate, ca. 3 × 1 mm, glabrous, 1-veined; bracteoles linear, ca. 5 × 1 mm, glabrous or puberulent with gland-tipped trichomes. Flowers distant on rachis, solitary, not paired. Calyx ca. 1 cm, densely white pilose at base and along midvein, 5-lobed almost to base; lobes linear, apex finely acuminate. Corolla purplish blue or white, 3.5–4.5 cm, curved, outside densely white pilose in bud, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then ventricose

and gradually widened to 1–1.5 cm at mouth; lobes suborbicular, ca. 8 mm in diam. Stamens 4, slightly exerted; filaments hirsute, shorter pair ca. 5 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 2 mm; pollen type 13. Ovary glabrous; style ca. 3.2 cm, pilose. Capsule linear-oblong, 1.8–2.2 cm, compressed, glabrous, 4-seeded, apex apiculate. Seeds ovate in outline, ca. 2 × 2 mm, densely appressed tomentose; areola very small. Fl. Oct–Jan.

By streams; 400–1200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Taiwan, Yunnan [Laos, Thailand, Vietnam].

The strongly anisophyllous sessile leaves combined with the densely pubescent buds make *Strobilanthes dalzielii* very distinct.

Specimens misidentified as *Difflugossa divaricata* (Nees) Bremekamp (H. P. Tsui & C. C. Hu, FRPS 70: 172. 2002; C. C. Hu & X. P. Fu, Higher Pl. China 10: 377. 2004) belong here.

40. *Strobilanthes bantonensis* Lindau, Bull. Herb. Boissier 5: 650. 1897.

桂越马蓝 gui yue ma lan

Shrubs of unknown size, strongly anisophyllous. Stems zigzag, glabrous. Petiole 2–5 mm; leaf blade ovate-elliptic, smaller of each pair deciduous, larger one 7–15 × 4–7 cm, glabrous, secondary veins 4 or 5 on each side of midvein, base cuneate, margin sinuate-dentate, apex acute. Inflorescences axillary or terminal, spikes 3–13 cm, fertile apically only; bracts oblanceolate to obovate, ca. 2 × 1 mm, sparsely gland-tipped pilose, ± persistent, apex obtuse to rounded; bracteoles linear-oblong, ca. 5 mm, sparsely gland-tipped pilose. Flowers 2 or 3 per spike, 1–1.4 cm apart, one fertile at each node alternately. Calyx 7–10 mm; lobes linear, 7–9 × ca. 1 mm, subequal, glabrous or becoming sparsely gland-tipped pilose, apex obtuse. Corolla purplish blue or white, ca. 3.2 cm, outside densely pubescent in bud, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm then ventricose and gradually widened to ca. 1.3 cm at mouth; lobes oblong, ca. 4 × 6 mm. Stamens 4, included; filaments of shorter stamen pair ca. 2 mm and glabrous, longer pair ca. 5 mm and sparsely hirsute; anther thecae oblong ca. 2 mm; pollen type 1. Ovary glabrous; style ca. 3 cm, sparsely hirsute. Capsule fusiform, 1.2–1.3 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3 mm, appressed pubescent. Fr. Dec.

Forests in limestone hills; 600–1500 m. Guangxi [Vietnam].

Strobilanthes bantonensis is a little-known species with very distinct pollen.

41. *Strobilanthes pateriformis* Lindau, Bull. Herb. Boissier 5: 653. 1897.

翅枝马蓝 chi zhi ma lan

Pteracanthus alatiramosus (H. S. Lo & D. Fang) C. Y. Wu & C. C. Hu; *Pteroptychia pateriformis* (Lindau) Bremekamp; *Strobilanthes alatiramosa* H. S. Lo & D. Fang.

Herbs to 50 cm tall, anisophyllous, drying blackish green. Stems somewhat zigzag, internodes winged, wing 1.5–4 mm wide. Petiole 1–3 cm, glabrous; leaf blade oblong-ovate to lanceolate, smaller of pair 2–8 × 1–3 cm and larger one 6–13(–17)

× 2.5–5.5 cm, glabrous, secondary veins 4–6 on each side of midvein, base cuneate and decurrent onto petiole, margin dentate to crenate, apex acute. Inflorescences axillary or terminal, spikes, 3–10 cm; bracts ovate to lanceolate, 2.5–5 mm, caducous, glabrous, apex acute to obtuse; bracteoles spatulate-linear to linear, 4–7 mm, caducous, glabrous. Flowers 5–10 mm apart on rachis, often one sterile per node. Calyx 6–12 mm, glabrous, subequally 5-lobed or with 2 lobes slightly longer; lobes lanceolate, ca. 10 × 1 mm but accrescent in fruit, apex acute. Corolla pale purple, 3–4 cm, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 5 mm then gradually widened to ca. 1 cm at mouth; lobes ovate, 3–4 mm, subequal, apex emarginate. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 5 mm, hirsute; anther thecae oblong, ca. 2.5 × 1 mm; pollen type 12. Ovary apex minutely pubescent; style ca. 2.5 cm. Capsule fusiform, ca. 1.4 cm, glabrous except apically, 4-seeded. Seeds ovate in outline, ca. 3 × 2.5 mm, densely appressed pubescent. Fl. Sep–Nov, fr. Dec–Feb.

Dense forests; 400–1700 m. Guangxi, Guizhou, Hainan, Sichuan, Yunnan [Indonesia, Laos, Thailand, Vietnam].

42. *Strobilanthes truncata* D. Fang & H. S. Lo, Guihaia 17: 31. 1997.

截头马蓝 jie tou ma lan

Herbs to 3 m tall, perennial, anisophyllous. Stems 4-angled, somewhat zigzag, sulcate, glabrous. Petiole 0.6–7 cm; leaf blade broadly ovate, ovate, ovate-elliptic, or rarely elliptic, smaller of pair 3.5–7 × 2–4 cm and larger one 10–19 × 4.5–11.5 cm, glabrous, densely covered with linear cystoliths especially along abaxial veins, secondary veins 4–7 on each side of midvein, reticulate veins conspicuous, base broadly cuneate and oblique, margin remotely dentate to rarely serrate, apex acute. Inflorescences axillary or terminal, spikes, 7–15(–26) cm, sometimes branched; peduncle 0.5–5.5 cm, glabrous; rachis 4-angled, strongly zigzag, sulcate, bifariously pubescent; bracts elliptic, 5–7 × ca. 4 mm, caducous, glabrous, margin ciliate, apex truncate to retuse; bracteoles yellowish but apically black, linear-lanceolate, ca. 8 × 1.5 mm, persistent, abaxially sparsely puberulent, margin ciliate, apex truncate to rounded. Flowers distant on rachis. Calyx yellowish with a black apex, 8–10 mm, sparsely pubescent, usually sparsely covered with cystoliths, 2-lipped, lower lip 2-lobed almost to base, upper lip 3-lobed; lobes lanceolate, 5–6 mm, margin apically ciliate. Corolla white, 3.5–4 cm, slightly curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 4 mm wide for 1–1.5 cm then ± ventricose and gradually widened to ca. 2 cm at mouth; lobes ovate, ca. 7 × 5 mm, apex obtuse. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair ca. 7 mm, sparsely hirsute; anther thecae oblong, 3–4 × ca. 1.5 mm; pollen type 12. Ovary comose; style ca. 2.7 cm, sparsely hirsute. Capsule fusiform, ca. 1.7 cm, glabrous except at apex, 4-seeded. Seeds ovate in outline, ca. 3 × 2.5 mm, densely appressed pubescent. Fl. Oct–Dec, Apr.

Forests on limestone hills; 900–1300 m. Guangxi (Napo) [Vietnam].

Strobilanthes truncata is doubtfully distinct from *S. pateriformis*, differing only in its truncate bracts and unwinged stem.

43. *Strobilanthes rankanensis* Hayata, Icon. Pl. Formosan. 9: 84. 1920.

兰嵌马蓝 lan qian ma lan

Parachampionella rankanensis (Hayata) Bremekamp.

Herbs 15–30 cm tall, rarely branched, isophyllous. Stems slender, 4-angled, procumbent, usually rooting at basal nodes, sulcate, bifariously pubescent. Petiole 0.5–1.5 cm, sulcate, bifariously pubescent or subglabrous; leaf blade ovate to elliptic, (0.5–)1–3.5 × 0.5–1.8 cm, glabrous or sparsely hirsute along veins, secondary veins 3 or 4 on each side of midvein, base cuneate to subrounded, margin serrate, apex acute. Flowers solitary in leaf axils. Bracts absent; bracteoles linear-spatulate, 6–9 × 0.7–0.9 mm, sparsely hirsute, apex obtuse. Calyx 6–9 mm, slightly hirsute, 2-lipped, lower lip 2-lobed almost to base, upper lip unequally 3-lobed; lobes linear, margin ciliate. Corolla glabrous, inside glabrous except for a few trichomes at base of filaments and adaxially in throat; tube basally cylindrical and ca. 1.5 mm wide for ca. 2.5 mm then gradually widened to ca. 2 cm at mouth; lobes oblong, ca. 3 × 4 mm, subequal, apex emarginate. Stamens 4, longer pair slightly exerted; filaments glabrous, shorter pair ca. 3 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2 mm, basally divergent; pollen type 11. Ovary ellipsoid, glabrous; style ca. 2 cm, basally sparsely gland-tipped pilose. Capsule fusiform, 1–1.2 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 2.5 × 1.5 mm, lenticular, densely covered with long appressed trichomes. Fl. May–Sep.

• Moist places in ravines; 600–1700 m. Taiwan.

Strobilanthes rankanensis is a distinctive, superficially isolated species because of the unique combination of trailing habit, 2-lipped calyx, and globose echinate pollen.

44. *Strobilanthes longispica* (H. P. Tsui) J. R. I. Wood & Y. F. Deng, Bot. J. Linn. Soc. 150: 383. 2006.

长穗腺背蓝 chang sui xian bei lan

Adenacanthus longispicus H. P. Tsui, Fl. Reipubl. Popularis Sin. 70: 348. 2002; *Strobilanthes tripartita* J. R. I. Wood.

Herbs to 1.2 m tall, isophyllous, drying blackish green. Stems 4-angled, sulcate, bifariously pubescent. Petiole (0.2–)1–2.8 cm, hirsute; leaf blade elliptic to long ovate, 4.5–13 × 1.4–5 cm, both surfaces slightly strigose, adaxially densely covered with linear cystoliths, secondary veins 7 or 8 on each side of midvein, base attenuate, margin serrate, apex acuminate. Inflorescences axillary or terminal, spikes, 3–20 cm, with 2–7 flower pairs; peduncle ca. 1 cm, pubescent; rachis pubescent with gland-tipped trichomes; bracts linear-lanceolate, 6–8 × 1–2 mm, persistent, abaxially pubescent with gland-tipped trichomes, 1-veined, apex acute; bracteoles linear, 4–6 × ca. 1 mm, pubescent with gland-tipped trichomes, apex acute. Flowers 1.5–3.5 cm apart on rachis, usually only one sterile per node. Calyx 1.2–1.8 cm, outside pilose with gland-tipped trichomes, 2-lipped; lower lip 2-lobed almost to base, lobes lanceolate and 10–16 × 1.2–1.5 mm; upper lip 3-lobed, lobes triangular and 4–

6 × 1.2–1.5 mm. Corolla violet blue, ca. 3.5 cm, slightly curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindric and narrow for ca. 7 mm then gradually widened to ca. 1 cm at mouth; lobes oblong-ovate, ca. 7 × 6 mm, apex emarginate. Stamens 4, included; filaments hirsute, shorter pair ca. 2.2 mm, longer pair ca. 5 mm; anther thecae oblong, ca. 2 mm; pollen type 3. Ovary ellipsoid, ca. 3 mm, glabrous; style ca. 1.8 cm, sparsely gland-tipped pubescent. Capsule oblong, 1.5–1.8 cm, gland-tipped pubescent at tip, 4-seeded. Seeds ovate in outline, ca. 3 × 2 mm, convex, densely pilose; areola small, glabrous. Fl. Oct–Jan.

Thickets on mountain slopes; 1300–1600 m. Yunnan (Gongshan) [Myanmar].

Strobilanthes longispica is very close to *S. dryadum*, differing only in its lanceolate rather than ovate-oblong bracts, unwinged inflorescence rachis, and less dense inflorescence indumentum.

45. *Strobilanthes dryadum* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 94. 1922.

林马蓝 lin ma lan

Pteracanthus dryadum (Benoist) C. Y. Wu & C. C. Hu.

Herbs to 1 m tall, much branched, nearly isophyllous. Stems 4-angled, sulcate, bifariously pubescent. Petiole 1–3 cm, sulcate, bifariously pubescent; leaf blade ovate to lanceolate, to 25 × 8 cm, glabrous, abaxially pale, secondary veins 6 or 7 on each side of midvein, base attenuate and decurrent onto petiole forming wings, margin crenate-dentate, apex acuminate. Inflorescences terminal, spikes, 3–6 cm, with 2–6 flower pairs; rachis pubescent with gland-tipped trichomes, winged, wing ca. 1 mm; bracts ovate-oblong, 4–7 × 1–2 mm, persistent, gland-tipped pubescent, apex obtuse; bracteoles oblong, ca. 4 × 0.5 mm, gland-tipped pubescent. Flowers distant on rachis, usually one sterile per node. Calyx 1–1.5 cm, accrescent in fruit, outside gland-tipped pubescent, 2-lipped; lower lip 2-lobed almost to base; upper lip 3-lobed to below middle, lobes linear-oblong and 11–15 × 1–2 mm. Corolla blue, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindric and ca. 2 mm wide for ca. 8 mm then gradually widened to ca. 1 cm at mouth; lobes oblong, ca. 8 × 8 mm. Stamens 4, included; filaments hirsute, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2 mm; pollen type 4. Ovary puberulent at tip; style ca. 2.2 cm, sparsely pilose; stigma linear, compressed. Capsule narrowly oblong-obovoid, 1–1.2 cm, apically gland-tipped pubescent, 4-seeded. Seeds pilose; areola small. Fl. May, Sep–Nov, fr. Jan–Mar.

• Moist places in forests; 1300–2500 m. Guangxi, Yunnan.

46. *Strobilanthes adpressa* J. R. I. Wood, Kew Bull. 58: 110. 2003.

紧贴马蓝 jin tie ma lan

Subshrubs to 2 m tall, anisophyllous. Stems somewhat sulcate, bifariously pilose with large-celled trichomes, eventually glabrescent, basally woody; nodes pustulose, pubescent. Leaves basally petiolate, apically sessile; petiole (0–)1–2.5 cm, sulcate, sparsely pilose; leaf blade ovate-elliptic, (4–)6–16 × (1–)3.5–8.5 cm, smaller of pair ca. 2/3 size of larger one, thinly

leathery, both surfaces villous with large-celled trichomes especially on veins, secondary veins 9–13 on each side of midvein, curved, and netted near margin, base decurrent onto petiole or those apically on stem amplexicaul, margin shallowly serrate, apex acuminate. Inflorescences terminal, spikes, 5–7 cm; rachis 4-angled, gland-tipped pilose; bracts somewhat imbricate, oblong, 1.1–1.7 × 0.5–0.7 cm, gland-tipped pilose, tardily deciduous as flowers open; bracteoles linear-oblong, 9–15 × 1.2–2 mm, persistent, abaxially gland-tipped pilose, apex acute. Flowers arranged in pairs, erect, ± appressed to rachis. Calyx 1.2–1.6 cm, 2-lipped; lower lip 2-lobed almost to base; upper lip 3-lobed, lobes 12–14 × ca. 1.5 mm. Corolla yellow or blue, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindric, ca. 2.5 mm wide for ca. 1.5 cm then gradually ventricose and widened to ca. 1.5 cm at mouth, strongly bent ca. 2.5 cm above base; lobes ovate, ca. 6 × 5 mm, apex obtuse. Stamens 4, included; filaments sparsely pilose, shorter pair ca. 4 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 4 × 1.5 mm. Ovary comose with shortly stipitate glands; style ca. 2.5 cm, pilose. Capsule not seen. Fl. Oct–Dec.

Stream-sides in forests; 1500–1800 m. Yunnan (Maguan) [Vietnam].

47. *Strobilanthes atroviridis* Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 480. 2010.

景东马蓝 jing dong ma lan

Subshrubs to 3 m tall, isophyllous or slightly anisophyllous, blackish green when dry. Stems branched, 4-angled, sulcate, glabrous, densely covered with white prominent cystoliths; nodes pustulose, pubescent. Petiole 2–5 cm, bifariously pubescent; leaf blade ovate-elliptic, 9–22 × 5.5–14 cm, abaxially paler green and glabrous, adaxially green, subglabrous with sparse large-celled trichomes, and sparsely covered with prominent cystoliths especially along veins, secondary veins 6–10 on each side of midvein, prominent on both surfaces, curved, and netted near margin, tertiary veins conspicuous, base decurrent onto petiole, margin crenulate, apex acute to long acuminate. Inflorescences axillary, shortly pedunculate spikes, 1–3(–6) cm, 2(–8)-flowered but commonly reduced to a subcapitate flower pair; rachis gland-tipped pubescent; bracts linear-lanceolate, 9–14 × 2–3 mm, abaxially gland-tipped pubescent, adaxially glabrous; bracteoles linear-lanceolate, 9–13 × ca. 2.5 mm, abaxially gland-tipped pubescent, adaxially glabrous. Flowers paired. Calyx 1–1.5 cm, outside gland-tipped pubescent, inside glabrous, 2-lipped; lower lip 2-lobed almost to base, lobes linear-lanceolate, 9–14 × 2–3 mm, and apex acute; upper lip with 3 lanceolate 5–7 mm teeth connate for 4–7 mm. Corolla purplish blue, 3–4 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube ca. 2 mm wide at base then gradually widened to ca. 2 cm at mouth; lobes ovate, ca. 1 × 1 cm, apex emarginate. Stamens 4, included; filaments basally pubescent, shorter pair ca. 6 mm, longer pair ca. 8 mm; anther thecae oblong; pollen type 3. Ovary not examined; style ca. 2 cm, glabrous. Capsule not seen. Fl. Apr, Jun, Nov.

• Moist places in forests; 2100–2400 m. Yunnan (Jingdong).

48. *Strobilanthes pteroclada* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 187. 1922.

延苞马蓝 yan bao ma lan

Hymenochlaena pteroclada (Benoist) C. Y. Wu & C. C. Hu.

Subshrubs or perennial herbs, to 1 m tall, slightly anisophyllous, becoming black when dry. Stems 4-angled, sulcate, glabrous or subglabrous. Petiole (0–)0.5–1.5(–4) cm; leaf blade lanceolate, 7–20 × 3–8 cm, glabrous, abaxially densely covered with white cystoliths along veins, adaxially cystoliths prominent, secondary veins 5–9 on each side of midvein, base cuneate and decurrent onto petiole, margin serrulate to crenate, apex acuminate. Inflorescences axillary or terminal, spikes, 5–12 cm; peduncle 2–4.5 cm, apically widened to ca. 1.6 cm to form base of bract; bracts lanceolate to narrowly ovate, 1.5–2 × 0.8–1.6 cm, glabrous or gland-tipped pubescent, pinnately veined, base gradually narrowed and decurrent onto peduncle, margin entire or slightly dentate, apex acute to acuminate; bracteoles narrowly lanceolate, 5–7 × ca. 0.8 mm, glabrous, apex acuminate. Flowers ca. 3 cm apart on rachis. Calyx 7–9 mm, glabrous, weakly 2-lipped; lower lip 2-lobed, lobes 6–8 mm; upper lip 3-lobed, lobes lanceolate, ca. 6 mm, and apex acuminate. Corolla purplish blue, 3–4 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2.5 mm wide for ca. 1.4 cm and then gradually widened to ca. 1.8 cm at mouth; lobes ovate, ca. 6 × 5 mm, subequal, apex obtuse. Stamens 4, included; filaments pilose at base, shorter pair ca. 4 mm, longer pair ca. 7 mm; anther thecae oblong, ca. 2.5 × 1.5 mm; pollen type 3. Ovary glabrous; style ca. 2.4 cm, sparsely pubescent. Capsule fusiform, ca. 1.3 cm, glabrous, 4-seeded. Seeds white, ovate in outline, ca. 2 × 2 mm, densely appressed tomentose. Fl. Apr–May, fr. Jun–Jul.

Thickets or forests by streams; 300–900 m. Guangxi, Guizhou [Vietnam].

49. *Strobilanthes ovata* Y. F. Deng & J. R. I. Wood, Novon 20: 143. 2010.

滇西马蓝 dian xi ma lan

Herbs 30–40 cm tall, perennial. Stems with a narrow wing to 0.8 mm wide on each side, densely covered with cystoliths, glabrous. Leaves basally petiolate and apically becoming sessile; petiole of basal leaves 3–5 mm, glabrous; leaf blade ovate-elliptic, 2–5 × 1–2.3 cm, both surfaces glabrous and with prominent cystoliths, abaxially paler and with prominent veins covered by cystoliths, secondary veins 2–4 on each side of midvein, base decurrent onto petiole, margin crenate to crenate-serrate, apex acuminate. Inflorescences terminal on main stem or on branches arising from apicalmost leaf axils, spikes, 1–7 cm; rachis narrowly winged, pilose with multicellular trichomes and some gland-tipped trichomes; bracts ovate, oblong-ovate, or rounded, 3–7 × 1–5 mm, pubescent; bracteoles oblanceolate, ca. 5 × 1 mm, subglabrous to pilose with multicellular trichomes and some gland-tipped trichomes, apex rounded. Calyx subglabrous or gland-tipped pilose on margin, slightly 2-lipped; upper lip 8–10 mm, 3-lobed to 3 mm from base, lobes triangular and 5–7 mm; lower lip 2-lobed almost to base, lobes linear-oblan-

ceolate to subspatulate, 9–10 mm, and apex obtuse. Corolla light blue, 3–3.5 cm, gently curved, subventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm and then gradually widened to ca. 1.3 cm at mouth; lobes ovate, ca. 4 × 4 mm, subequal. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 5 mm, basally pilose; anther thecae oblong, ca. 2 × 1 mm; pollen type 3. Ovary oblong, ca. 2 mm, comose at tip; style ca. 2.2 cm, sparsely pilose. Capsule narrowly oblong-ellipsoid, ca. 12 × 2 mm, glabrous except for gland-tipped pubescent tip, 4-seeded. Seeds ovate to suborbicular in outline, ca. 3 × 2 mm, pilose. Fl. Oct–Feb, fr. Dec–Mar.

• Moist forests; 1600–2200 m. Yunnan.

50. *Strobilanthes tamburensis* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 454. 1884.

毛冠马蓝 mao guan ma lan

Herbs to 50 cm tall, perennial, slightly anisophyllous. Stems decumbent and basally rooting then ascending, 4-angled, sulcate, bifariously pilose. Leaves usually sessile or with a petiole to 3 mm; leaf blade ovate to suborbicular, 8–45 × 8–45 cm, both surfaces glabrous or pilose, abaxially whitish, adaxially green, secondary veins 5–7 on each side of midvein, base rounded to subcordate, margin entire or obscurely crenulate-serrate, apex acute to obtuse. Inflorescences terminal, spikes, 3–6 cm; bracts orbicular to obovate, 5–8 × 5–8 mm, persistent until flowers fall, pilose; bracteoles obovate, ca. 3 × 3 mm, pilose. Flowers ca. 2.5 cm apart basally on rachis but imbricate apically. Calyx 6–10 mm, 5-lobed almost to base; lobes linear-spatulate, margin ciliate. Corolla blue, 2.5–3 cm, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1 cm then bent to ca. 90° and abruptly widened to 8–10 mm at mouth; lobes broadly ovate, ca. 5 × 6–7 mm. Stamens 4, included; filaments subglabrous, shorter pair ca. 4 mm, longer pair ca. 7 mm; anther thecae oblong, ca. 2 × 1 mm; pollen type 16. Ovary gland-tipped; style ca. 2.5 cm, sparsely pilose, apically glabrous. Capsule ca. 1.2 cm, gland-tipped pilose, 4-seeded. Seeds orbicular in outline, ca. 3 × 3 mm, densely pilose; areola absent. Fl. Aug–Nov.

Wet places in forests; 1200–2100 m. Xizang (Cona) [Bhutan, India, Nepal].

51. *Strobilanthes taoana* Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 479. 2010.

陶氏马蓝 tao shi ma lan

Subshrubs, weakly anisophyllous, becoming black when dry. Stems somewhat sulcate, pilose with large-celled trichomes, eventually glabrescent, basally woody. Petiole 0–2 mm, pilose; leaf blade ovate, 4–10 × 2–5 cm, smaller of pair ca. 2/3 size of larger one, abaxially paler, glabrous except for a few trichomes on veins, and densely covered with prominent cystoliths, adaxially green with inconspicuous cystoliths and subglabrous except for a few scattered hispid trichomes and a strigose or scurfy midvein, base slightly asymmetric, rounded to subcordate, and briefly decurrent onto petiole, margin serrate, apex

acute to shortly acuminate and commonly falcate. Inflorescences axillary or terminal, spikes, 2–5 cm; rachis straight, pilose; sterile bracts leaflike, apically diminishing in size, subsessile, ovate, 1–4 × 0.7–2.2 cm, apex acuminate; floral bracts oblong-elliptic, 3–6 × 2–4 mm, glabrous, apex acuminate; bracteoles obovate to oblong-lanceolate, 3–5 × 1–2 mm, glabrous. Flowers in opposite pairs but often solitary. Calyx 9–16 × 1–2 mm, subequally 5-lobed to ca. 1 mm from base; lobes almost colorless, linear, glabrous, covered with cystoliths, apex obtuse. Corolla white, 2–2.5 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube basally ca. 2 mm wide then gradually widened to ca. 1.2 cm at mouth; lobes ovate, 4–6 mm, apex rounded. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 6 mm; anther thecae spherical, ca. 1 mm in diam., glabrous. Ovary glabrous; style ca. 2 cm, glabrous. Capsule not seen. Fl. Jan.

- Limestone hills; ca. 2200 m. Yunnan (Jinghong).

52. *Strobilanthes rubescens* T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867.

红色马蓝 hong se ma lan

Pteracanthus rubescens (T. Anderson) Bremekamp.

Subshrubs 0.5–2 m tall, isophyllous. Stems somewhat sulcate, pilose with large-celled trichomes, eventually glabrescent, basally woody. Petiole to 2 mm but apically leaves becoming sessile, pilose; leaf blade ovate to suborbicular, 4–10 × 2–5 cm, smaller of pair ca. 2/3 size of larger one, abaxially paler and glabrous except for a few trichomes on veins and densely covered with prominent cystoliths, adaxially green with inconspicuous cystoliths and subglabrous except for a few scattered hispid trichomes and a strigose or scurfy midvein, base rounded, cordate, or cuneate and decurrent onto petiole, margin crenulate-dentate, apex acute to shortly acuminate and commonly falcate. Inflorescences axillary, spikes, 2–5 cm, secund, sometimes reduced to solitary flowers in leaf axils; rachis straight or obscurely zigzag, pilose; sterile bracts leaflike, sessile, ovate, 1–4 × 0.7–2.2 cm, variable in development, glabrous, densely covered with cystoliths, apex acuminate; floral bracts ovate, 2–3 × 1–1.5 mm, persistent, glabrous, apex acuminate; bracteoles oblong-lanceolate, 1.5–3 × 0.5–1 mm, caducous, glabrous. Flowers to 2 cm apart basally on rachis but internodes shorter apically. Calyx 0.9–1.6 cm, subequally 5-lobed to ca. 1 mm from base; lobes almost colorless, linear, 1–2 mm wide, glabrous, covered with cystoliths, apex acute. Corolla white, 2–2.5 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for ca. 5 mm then gradually widened to ca. 1.2 cm at mouth; lobes ovate, 4–6 mm, apex rounded. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 6 mm; anther thecae spherical, ca. 1 mm in diam., glabrous; pollen type 3, requires confirmation. Ovary glabrous; style ca. 2 cm, glabrous. Capsule 1–1.2 cm, glabrous except hairy at tip, 4-seeded. Fl. Oct–May.

- Limestone hills; ca. 1900 m. Yunnan [Bhutan, India].

53. *Strobilanthes pinetorum* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 197. 1918.

松林马蓝 song lin ma lan

Difflugossa pinetorum (W. W. Smith) C. Y. Wu & C. C. Hu.

Subshrubs to 1 m tall, much branched, anisophyllous. Stems erect, glabrous or subglabrous. Petiole (0–)1–2 cm, subglabrous, winged; leaf blade broadly ovate to suborbicular, smaller of pair 2–3 × 1–1.5 cm and larger one 6–10 × 3.5–5 cm, both surfaces with prominent cystoliths, abaxially olive-green and glabrous, adaxially dark green and sparsely pilose but soon glabrescent, secondary veins 5 or 6 on each side of midvein, base subrounded to broadly cuneate and abruptly decurrent onto petiole or cordate for apical leaves, margin serrate, apex long acuminate. Inflorescences axillary or terminal, simple or branched spikes, to 10 cm; sterile bracts leaflike, sessile, ovate, 1–5 × 0.7–3.5 cm, base cordate, apex shortly acuminate; floral bracts ovate-oblong, 7–11 × 2–3 mm; bracteoles linear-lanceolate, ca. 6 × 1 mm, glabrous, apex obtuse. Calyx ca. 7 mm, glabrous, 5-lobed almost to base; lobes linear-oblong, ca. 6 × 1 mm, apex obtuse. Corolla whitish purple, ca. 4 cm, curved, ventricose, outside glabrous; tube basally cylindrical and ca. 2 mm wide for ca. 1.3 cm then curved and gradually widened to ca. 1.2 cm at mouth; lobes orbicular, ca. 4 × 4 mm. Stamens 4, included; filaments subglabrous, shorter pair ca. 4 mm, longer pair ca. 7 mm; anther thecae oblong, ca. 2 × 1.5 mm; pollen type 5. Ovary pilose at tip; style ca. 3.2 cm, apically sparsely hirsute. Capsule not seen. Fl. Jun.

- Forests; ca. 2000 m. Yunnan (Tengchong).

Strobilanthes pinetorum is only known from the type, which is distinctive but very immature.

54. *Strobilanthes helicta* T. Anderson, J. Linn. Soc., Bot. 9: 479. 1867.

曲序马蓝 qu xu ma lan

Asystasia calycina Nees (1832), not *Strobilanthes calycina* Nees (1836); *Echinacanthus calycinus* (Nees) Nees; *Pteracanthus calycinus* (Nees) Bremekamp.

Subshrubs 50–100 cm tall, pliestesial, nearly isophyllous. Stems 4-angled, erect, sulcate, usually glabrous but sometimes apically brown pubescent. Petiole 0.2–5 cm, bifariously pubescent; leaf blade ovate-lanceolate to elliptic, 5–12 × 1–6 cm, both surfaces glabrous except for pubescence on margin near base, abaxially paler, adaxially dark green, secondary veins 6 or 7 on each side of midvein and abaxially prominent, base attenuate and decurrent onto petiole, margin serrate to rarely subentire, apex acuminate. Inflorescences axillary, spikes, 2–12 cm, secund, sometimes few flowered and frequently with bract pairs fertile only apically; rachis usually strongly zigzag; bracts linear, 5–13 mm, persistent, one of pair per node shorter than other, glabrous or gland-tipped pilose; bracteoles linear, 2–3 mm, glabrous or gland-tipped pilose. Flowers 6–10 mm apart on rachis, only one sterile per node. Calyx 1.3–2.5 cm, glabrous or gland-tipped pubescent, 5-lobed almost to base; lobes linear with one shorter than others, often keeled, outside with white cystoliths, apex acuminate. Corolla white or flushed pale purple, 3.5–4 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally narrow and cylindrical for ca. 5 mm then

abruptly widened to ca. 1.8 cm and finally narrowed slightly and bent to ca. 90° near mouth; lobes oblong, ca. 5 × 4 mm, unequal, apex emarginate. Stamens 4, included; filaments glabrous, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 3 × 1 mm; pollen type 4. Ovary glabrous; style 2.8–3.2 cm, apically hirsute. Capsule oblong, 1.8–2 cm, glabrous, 4-seeded, apex apiculate. Seeds ovate in outline, ca. 4 × 2.5 mm, appressed pubescent. Fl. Sep–Nov, fr. Nov–Jan.

Evergreen broad-leaved forests; 1700–2200 m. SE Xizang, Yunnan [Bhutan, India, Myanmar, Nepal].

55. *Strobilanthes rostrata* Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 476. 2010.

西畴马蓝 xi chou ma lan

Herbs to 1 m tall, perennial, slightly anisophyllous. Stems 4-angled, sulcate, glabrous. Petiole (1.5–)4–8 cm, glabrous; leaf blade elliptic, (4.5–)11–17 × (2.5–)7–10 cm, both surfaces glabrous, abaxially paler, adaxially green and with numerous cystoliths, secondary veins (6–)9–12 on each side of midvein, base subrounded and decurrent onto petiole, margin dentate, apex acute. Inflorescences axillary, branched spikes, bearing a pair of reduced leaves at branching point and forming a lax terminal panicle of spikes, ultimate branches slightly zigzag; bracts spatulate-linear, 2–3 mm, persistent, glabrous, both surfaces with abundant white cystoliths; bracteoles linear, ca. 3 mm. Flowers only one fertile per pair. Calyx ca. 1 cm, glabrous, outside densely covered with white cystoliths, inside with cystoliths in 2 lines along lobe margin, 5-lobed to ca. 2 mm from base; lobes linear, equal. Corolla blue, ca. 3.8 cm, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1.2 cm, bent to ca. 45° at middle, and gradually widened to ca. 1 cm at mouth. Stamens 4; filaments included, shorter pair ca. 6 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 2 mm. Ovary glabrous; style ca. 2.7 cm, pilose. Capsule ca. 1.6 cm, glabrous, 4-seeded, apex with a ca. 4 mm beak. Seeds ovate in outline, ca. 2 × 2 mm, appressed pilose; areola small. Fl. Aug–Sep, fr. Nov.

• Forests by streams in limestone areas; 1400–1600 m. Yunnan (Xichou).

56. *Strobilanthes chrysodelta* J. R. I. Wood, Kew Bull. 64: 41. 2009.

金三角马蓝 jin san jiao ma lan

Herbs 30–60 cm tall, perennial, anisophyllous. Stems slightly 4-angled, sulcate, glabrous. Petiole 0.5–2.5 cm, glabrous; leaf blade elliptic, 3–9 × 1.7–4 cm, smaller of pair ca. 2/3 size of larger one but similar in shape, both surfaces glabrous, abaxially with prominent cystoliths, adaxially much paler, secondary veins 4 on each side of midvein, base attenuate and slightly decurrent onto petiole, margin slightly serrate, apex acute. Inflorescences terminal, spikes, 2–10 cm, 2–10-flowered; rachis gland-tipped pilose; basal sterile bracts leaflike but sessile or almost so, ovate, base rounded; apical floral bracts ovate-elliptic, 5–6.5 × ca. 2 mm, persistent, gland-tipped pilose, apex obtuse; bracteoles oblong-oblongeolate, ca. 8 × 1 mm, persistent until after anthesis, gland-tipped pilose, apex obtuse. Flowers

opposite pairs, 1–2 cm apart on rachis. Calyx 1–1.1 cm, accrescent to ca. 1.5 cm in fruits; lobes linear, gland-tipped pilose, apex obtuse; lower 2 lobes distinct to base; upper 3 lobes connate for ca. 3 mm from base but becoming distinct in fruit, central lobe slightly longer than others and becoming subspatulate. Corolla pale violet with a white tube, 3.7–4 cm, straight, outside glabrous; tube basally cylindrical and ca. 2.5 mm wide for ca. 1.1 cm then gradually widened to ca. 1.2 cm at mouth; lobes ovate, 9–10 × ca. 7 mm, apex rounded. Stamens 4, all fertile, included; filaments erect, very sparsely pilose, shorter pair ca. 2 mm, longer pair ca. 4 mm; anther thecae oblong, ca. 2 × 0.5 mm, erect, mucicous. Ovary comose; style pilose. Capsule ca. 1.5 cm, glabrous except for a few gland-tipped trichomes at apex, 4-seeded. Seeds ca. 3 × 2.5 mm, lenticular, pilose; areola almost lacking. Fl. and fr. Apr.

Moist places; 2100–2400 m. Yunnan [Myanmar].

57. *Strobilanthes tonkinensis* Lindau, Bull. Herb. Boissier 5: 651. 1897.

糯米香 nuo mi xiang

Herbs 50–100 cm tall, weakly anisophyllous. Stems 4-angled, pubescent, glabrescent, fragrant when dry. Petiole to 2 cm, pubescent; leaf blade broadly oblong-elliptic, to 18.5 × 6 cm, both surfaces sparsely pubescent especially on veins, adaxially with prominent cystoliths, secondary veins 4–7 on each side of midvein, base cuneate and decurrent onto petiole, margin crenate, apex acute. Inflorescences terminal, simple spikes, 3–11 cm, sometimes with branches arising in apical leaf axils; rachis pubescent with gland-tipped trichomes; bracts linear-spatulate, 10–12 × 2–2.5 mm, sparsely pubescent and gland-tipped pubescent, densely covered with white cystoliths, 1-veined; bracteoles linear, ca. 5 × 1 mm, pubescent, abaxially densely covered with cystoliths. Calyx 5-lobed to base; lobes linear, 8–9 × ca. 1 mm, subequal, pubescent, outside covered with prominent cystoliths. Corolla pink to pure white, ca. 3.2 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then gradually widened to ca. 1 cm at mouth; lobes orbicular, ca. 5 mm in diam. Stamens 4, included; shorter filament pair ca. 4 mm, glabrous; longer filament pair ca. 7 mm, puberulent; anther thecae oblong, ca. 3 mm; pollen type 4. Ovary obovoid, ca. 3 mm, gland-tipped pilose at tip; style ca. 1.5 cm, glabrous. Capsule narrowly oblong-obovoid, 8–10 × ca. 2.5 mm, gland-tipped pilose, 4-seeded, apex apiculate. Seeds ovate in outline, ca. 2 × 2 mm, pubescent; areola small, glabrous. Fl. Apr–Jun, Dec, fr. Jun–Jul.

Moist forests; 200–1500 m. Guangxi, Yunnan [Thailand, Vietnam].

Strobilanthes tonkinensis is a medicinal and aromatic plant.

The name "*Semnostachya menglaensis*" (H. P. Tsui, FRPS 70: 349. 2002) belongs here but was not validly published because the herbarium where the type specimen is conserved was not specified (*Vienna Code*, Art. 37.7).

58. *Strobilanthes stolonifera* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 98. 1922.

匍枝马蓝 pu zhi ma lan

Subshrubs to 20 cm tall, isophyllous. Stems ascending, usually rooting at nodes, glabrous but with cystoliths. Petiole 3–15(–20) mm, glabrous; leaf blade elliptic, (3–)5–10 × (1–)2–2.5 cm, both surfaces with prominent cystoliths, abaxially pale green to whitish and sparsely pubescent, adaxially pubescent but soon glabrescent, secondary veins 5–7 on each side of midvein, base decurrent onto petiole, margin crenate to crenate-serrate, apex acuminate. Inflorescences terminal, spikes, 1–2 cm; rachis pilose; sterile bracts at base of inflorescence leaflike; floral bracts oblong to elliptic, 9–13 × 2–3 mm, pubescent; bracteoles oblong, ca. 8 × 1.5 mm, pilose with large-celled trichomes. Calyx lobes linear, 11–14 × ca. 1 mm, pubescent with some trichomes gland-tipped. Corolla violet, 3–3.5 cm, subventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then slightly curved and gradually widened to ca. 1 cm at mouth; lobes ovate, ca. 4 × 4 mm. Stamens 4, included; filaments pilose, shorter pair ca. 3 mm, longer pair ca. 6 mm; anther thecae oblong, 2.5–3 × ca. 0.8 mm; pollen type 4, requires confirmation. Ovary oblong, 3–4 mm, puberulent at tip with some gland-tipped trichomes; style ca. 3 cm, villous. Capsule narrowly oblong, ca. 13 × 3 mm, pilose, 4-seeded. Seeds orbicular in outline, ca. 3 × 3 mm, villous. Fl. Jun.

- Dry places; 1800–2400 m. Yunnan.

59. *Strobilanthes vallicola* Y. F. Deng & J. R. I. Wood, Bot. J. Linn. Soc. 150: 380. 2006.

河口马蓝 he kou ma lan

Herbs 0.8–1.5 m tall, perennial, isophyllous. Stems black, 4-angled, apically sulcate, glabrous. Petiole 1.3–2.5 cm, glabrous; leaf blade oblong-elliptic, 15–25 × 6.5–11 cm, both surfaces glabrous and with prominent cystoliths, abaxially paler and with prominent veins covered with cystoliths, secondary veins 6–9 on each side of midvein, base cuneate, margin serrate, apex acuminate. Inflorescences terminal, spikes, 15–25 cm, branched or rarely unbranched; rachis densely pilose with large-celled trichomes; bracts ovate-oblong, 8–12 × ca. 4 mm, persistent, pilose with large-celled trichomes and some gland-tipped trichomes; bracteoles lanceolate, 9–13 × 1.1–1.3 mm, persistent, pilose with large-celled trichomes and some gland-tipped trichomes. Flowers opposite pairs, sessile, 0.8–2 cm apart on rachis. Calyx 14–18 × 1–1.5 mm, persistent, pilose with large-celled trichomes, some trichomes gland-tipped. Corolla white, 3–3.5 cm, outside glabrous except for lobe margin, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for 1–1.5 cm then gradually ventricose and strongly bent 1.5–2.5 cm from base; lobes ovate, ca. 4 × 5 mm, apex obtuse. Stamens 4, included; filaments glabrous, shorter pairs 2–3 mm, longer pairs 3–5 mm; anther thecae oblong, 3–4 × ca. 1 mm, glabrous; pollen type 9. Ovary ca. 3 × 1 mm, glabrous; style ca. 2.5 cm. Capsule oblong, 1.5–2 × 0.2–0.3 cm, narrowed at both ends, comose, 4-seeded. Seeds ovate to suborbicular in outline, ca. 3 × 3 mm, pilose. Fl. Apr–Jun.

- Moist places, stream and riversides in moist forests; below 200 m. Yunnan (Hekou).

60. *Strobilanthes cognata* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 189. 1922.

奇瓣马蓝 qi ban ma lan

Pteracanthus cognatus (Benoist) C. Y. Wu & C. C. Hu.

Herbs to 50 cm tall, isophyllous, drying blackish. Stems stout, 4-angled, lenticellate, glabrous. Petiole ca. 1 cm, glabrous; leaf blade oblong to lanceolate, 6–12 × 3–4.5 cm, both surfaces densely covered with small cystoliths, very sparsely pilose with scattered large-celled trichomes, secondary veins 8–10 on each side of midvein, base cuneate, margin crenate, apex acuminate. Inflorescences terminal, spikes, 3–5 cm; bracts lanceolate, 7–20 × ca. 6 mm, sparsely pilose with large-celled white trichomes, margin ciliate, apex acuminate; bracteoles oblong, ca. 11 × 2 mm, gland-tipped pilose, apex acute. Flowers imbricate on rachis. Calyx 1–1.2 cm, outside gland-tipped pilose, 5-lobed almost to base; lobes linear, ca. 1 mm wide, apex acute. Corolla violet, 4–5 cm, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 2.5 cm then gradually widened to ca. 1.5 cm at mouth; lobes oblong, ca. 6 × 5 mm, apex obtuse. Stamens 4, included; filaments erect, shorter pair ca. 6 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 3 × 1 mm; pollen type 4. Ovary glabrous except pilose at tip; style 3.5–4.2 cm. Capsule ca. 1.8 cm, pilose at tip, 4-seeded. Seeds ovate in outline, ca. 3 × 2.5 mm, densely appressed pubescent. Fl. Aug–Oct, fr. Nov–Dec.

- Moist places by streams; 1200–1400 m. Guizhou, Hubei, Hunan.

61. *Strobilanthes cusia* (Nees) Kuntze, Revis. Gen. Pl. 2: 499. 1891.

板蓝 ban lan

Goldfussia cusia Nees in Wallich, Pl. Asiat. Rar. 3: 88. 1832; *Baphicacanthus cusia* (Nees) Bremekamp; *Dipteracanthus calycinus* Champion; *Ruellia indigofera* Griffith; *R. indigotica* Fortune; *Strobilanthes balansae* Lindau; *S. championii* T. Anderson; *S. flaccidifolia* Nees.

Herbs 0.5–1.5 m tall, erect, branched, drying blackish, isophyllous to weakly anisophyllous. Stems glabrous or minutely brown puberulent. Petiole 0.5–7 cm; leaf blade elliptic to ovate, 4–20 × 2–9 cm, both surfaces glabrous or abaxially minutely puberulent along veins, abaxially paler green, adaxially dark green, secondary veins 7–9 on each side of midvein, base attenuate, margin serrate, apex acute. Inflorescences terminal or axillary, bracteate spikes, 1–6 cm, often aggregated to form a leafy branched panicle; peduncle 1–12 cm; bracts leaflike, petiolate, oblanceolate, obovate, or spatulate, 1.2–2.5 cm, basally usually sterile; bracteoles linear-oblanceolate, 2–3 mm, deciduous before bracts. Calyx 0.8–1.5 mm in flower, accrescent to ca. 2.5 cm in fruit, minutely puberulent, 5-lobed almost to base; 4 lobes linear-lanceolate, apex acute to obtuse; 1 lobe oblanceolate and much longer. Corolla blue, 3.5–5 cm, straight to slightly bent, outside glabrous; tube basally cylindrical and ca. 3 mm wide for 1–1.5 cm then slightly curved and gradually widened to ca. 1.5 cm at mouth; lobes oblong, ca. 9 × 9 mm, subequal. Stamens 4, included; filaments glabrous, shorter pair ca. 3 mm, longer pair ca. 7 mm; anther thecae oblong, ca. 3 mm; pollen type 4. Ovary oblong, apex puberulent with few gland-tipped

trichomes; style ca. 3.2 cm, glabrous. Capsule 1.5–2.2 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3.5 mm, covered with appressed trichomes; areola small. Fl. Jul–Feb, fr. Dec–Feb. $2n = 16, 32$.

Usually in moist wooded places, sometimes cultivated; 100–2000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Sichuan, Taiwan, SE Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, India, Laos, Myanmar, Thailand, Vietnam].

Strobilanthes cusia is reported to flower irregularly. The species is perhaps pleistoesial.

In at least part of its stated range *Strobilanthes cusia* may be cultivated rather than native.

This is a medicinal and dye plant and is the source of “Assam indigo.”

62. *Strobilanthes flexicaulis* Hayata, Icon. Pl. Formosan. 5: 135. 1915.

曲茎兰嵌马蓝 qu jing lan qian ma lan

Parachampionella flexicaulis (Hayata) C. F. Hsieh & T. C. Huang; *Strobilanthes fauriei* Benoist; *S. glandulifera* Hayata; *S. prionophylla* Hayata; *Triaenacanthus flexicaulis* (Hayata) C. F. Hsieh & T. C. Huang.

Subshrubs to 1 m tall, much branched, anisophyllous. Stems 4-angled, winged, glabrous. Petiole 0.2–2.5 cm, glabrous or sparsely pubescent; leaf blade ovate, ovate-lanceolate, or ovate-elliptic, 3.5–18 × 1.8–5 cm, abaxially glaucous, adaxially sparsely pilose to subglabrous, secondary veins 4–6 on each side of midvein, base narrowly cuneate and decurrent onto petiole, margin serrate to crenate, apex acuminate. Inflorescences axillary or terminal, spikes, ca. 3 cm, few flowered; rachis often zigzag, glabrous to gland-tipped pilose; bracts persistent, basally merging into leaves, ovate to suborbicular, and shortly petiolate, apically becoming ovate to oblanceolate and sessile, 4–15 × 2–10 mm, apically diminishing in size, glabrous, apex obtuse; bracteoles linear, ca. 4 × 0.5 mm at anthesis but accrescent to ca. 14 × 1 mm, glabrous or sparsely gland-tipped pilose. Pedicel to 1 mm or flowers sessile. Calyx 0.9–1.1 cm at anthesis, strongly accrescent to ca. 3.2 cm in fruit, 2-lipped; lower lip 2-lobed almost to base, lobes linear; upper lip 3-lobed to middle, lobes linear, ca. 6 × 1 mm at anthesis, margin ciliate with gland-tipped trichomes but soon glabrescent, and apex obtuse. Corolla blue to purple, campanulate, ca. 4 cm, outside glabrous or glabrescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 4 mm wide for ca. 1.5 cm then gradually widened to ca. 1.5 cm at mouth; limb slightly 2-lipped; lower lip ca. 1 cm, 3-lobed, center lobe orbicular, ca. 6 × 7 mm, base contracted, and apex emarginate, lateral lobes orbicular, somewhat oblique, and apex emarginate; upper lip 2-lobed, lobes semiorbicular and ca. 5 × 8 mm. Stamens 4; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 7 mm, hirsute; anther thecae oblong-linear, ca. 3.5 × 1 mm; pollen type 3. Ovary obovoid, glabrous; style filiform, ca. 3 cm, pubescent with gland-tipped trichomes; stigma subulate. Capsule linear-oblong, 1.6–2 cm, glabrous, 4-seeded. Seeds oblong-ovate in outline, ca. 3.5 × 2 mm, densely covered with appressed trichomes. Fl. Sep–Nov, fr. Feb. $2n = 30$.

Streamsides in forests; 200–2300 m. Taiwan [Japan (Ryukyu Islands)].

Strobilanthes tashiroi Hayata (*S. flexicaulis* var. *tashiroi* (Hayata) Yamazaki) is endemic to the Ryukyu Islands (K. Iwatsuki et al., eds., Fl. Japan 3a: 391. 1993).

63. *Strobilanthes lanyuensis* Seok, C. F. Hsieh & J. Murata, J. Jap. Bot. 79: 151. 2004.

兰屿马蓝 lan yu ma lan

Subshrubs to 1.5 m tall, anisophyllous. Stems 4-angled, retrorsely pubescent. Petiole 0.5–5 cm, appressed pubescent; leaf blade variable in shape and size, oblong-lanceolate, oblong-ovate, or ovate, 3–20 × 2–8 cm, abaxially glabrous or sometimes pubescent along veins, adaxially glabrous and with numerous cystoliths, secondary veins 3–5 on each side of midvein and abaxially prominent, base cuneate to narrowly cuneate and decurrent onto petiole, margin mucronate-serrate, apex acute to acuminate. Inflorescences terminal or from apical leaf axils, spikes, 5–10 cm; rachis 4-angled, glabrous or gland-tipped pubescent; bracts obovate, narrowly oblong, or linear-oblong, 1–2.5 × 0.3–2 cm, abaxially glabrous or sparsely pubescent and with numerous cystoliths, apex obtuse; bracteoles linear, 10–20 × 3–4 mm, abaxially glabrous or sparsely pubescent. Calyx 1.3–2.4 cm, accrescent to ca. 4 cm in fruit, 2-lipped, lower lip 2-lobed almost to base, upper lip 3-lobed to 2/3 of length; lobes linear, glabrous, pubescent, or rarely gland-tipped pilose on margin, cystoliths numerous, apex acute. Corolla white, funnel-shaped, ca. 4 cm, bent near mouth, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 8 mm then gradually widened to ca. 1.5 cm at mouth; lobes oblong, ca. 5 × 4 mm. Stamens 4, included; filaments densely pilose, shorter pairs ca. 2 mm, longer pair ca. 2.5 mm; anther thecae oblong, ca. 2 mm; pollen type 3. Ovary glabrous; style ca. 2.5 cm; stigma very unequally 2-lobed. Capsule cylindrical-fusiform, ca. 1.7 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3 × 3 mm, densely appressed pubescent. Fl. Sep–Nov, fr. Jan.

• Moist places in forests; 200–1000 m. Taiwan (Lan Yu).

Strobilanthes lanyuensis is close to *S. flexicaulis*, itself a variable species, differing only in the white, resupinate corolla and a few other minor characters. Further studies are needed to confirm its status.

64. *Strobilanthes atropurpurea* Nees in Wallich, Pl. Asiat. Rar. 3: 86. 1832.

翅柄马蓝 chi bing ma lan

Herbs 30–50(–100) cm tall, perennial, much branched, isophyllous or slightly anisophyllous. Stems slender, 4-angled, rooting at nodes, glabrous or pubescent. Leaves basally petiolate, apically sessile; petiole 0–2 cm, winged, glabrous or pubescent; leaf blade ovate, elliptic, or narrowly lanceolate, 1–6(–16) × 0.5–3.5(–6.5) cm, puberulent or glabrous, adaxially with linear cystoliths, secondary veins 5 or 6 on each side of midvein, base rounded to attenuate and shortly decurrent onto petiole, margin serrate to coarsely crenate, apex acute to acuminate. Inflorescences axillary, spikes, 2–7 cm, zigzag, secund, few flowered, often much reduced to flowers solitary or paired in leaf axil on main stem; bracts leaflike, ovate to subcordate, 8–

10 × ca. 3 mm, apically smaller, persistent, glabrous, 3-veined or pinnately veined; bracteoles linear-oblong, ca. 5 × 2 mm. Calyx 1–1.5 cm, accrescent to 2–2.5 cm in fruit, 5-lobed almost to base; lobes linear, 11–20 × 1–1.5 mm, unequal with one slightly larger than others, glabrous or pilose, rarely gland-tipped pubescent, abaxially with linear cystoliths. Corolla pale purple, bluish purple, or rarely white, 2.5–3.5 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then inflated, widened to 1.5–1.8 cm, and bent at mouth; lobes oblong, ca. 3 × 4 mm, apex obtuse. Stamens 4, included; filaments glabrous, shorter pair ca. 4 mm, longer pair ca. 7 mm; anther thecae oblong, ca. 2 mm; pollen type 3. Ovary glabrous; style ca. 2 cm, glabrous; stigma acute. Capsule fusiform, 1.2–1.8 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3 × 3 mm, pubescent with appressed trichomes; areola 0.2–0.3 mm. Fl. Jun–Oct.

Moist places on mountain slopes, forests, by rivers; 700–2900 m. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Myanmar, Nepal, Pakistan, Vietnam].

There are no reports of *Strobilanthes atropurpurea* being pliestesial flowering from China or the E Himalaya, although this is a well-known phenomenon in this species in the W Himalaya.

- 1a. Leaf blade ovate to ovate-elliptic, 1.5–6(–16) × 1–3.5(–6.5) cm, glabrous or pubescent 64a. var. *atropurpurea*
- 1b. Leaf blade lanceolate, 1–3 × 0.5–1.2 cm, glabrous 64b. var. *stenophylla*

64a. *Strobilanthes atropurpurea* var. *atropurpurea*

翅柄马蓝(原变种) chi bing ma lan (yuan bian zhong)

Hemigraphis cuneata S. Y. Hu; *Pteracanthus alatus* (Wallich ex Nees) Bremekamp; *Ruellia alata* Wallich ex Nees; *Strobilanthes densa* Benoist; *S. wallichii* Nees; *S. wallichii* var. *microphylla* Nees.

Leaf blade ovate to ovate-elliptic, 1.5–6(–16) × 1–3.5(–6.5) cm, glabrous or pubescent. Fl. Jun–Sep. 2n = 32, 40.

Moist places on mountain slopes, forests; 700–2900 m. Chongqing, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Xizang (Cona, Nyalam), Yunnan, Zhejiang [Bhutan, India, Myanmar, Nepal, Pakistan, Vietnam].

The name “*Strobilanthes triflora*” (Y. C. Tang, Iconogr. Cormophyt. Sin. 4: 163. 1975) belongs to this variety but was not validly published because no Latin description or diagnosis was provided (*Vienna Code*, Art. 36.1).

64b. *Strobilanthes atropurpurea* var. *stenophylla* (C. B. Clarke) Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 482. 2010.

镇宁马蓝 zhen ning ma lan

Strobilanthes stenophylla C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 472. 1884 [“*stenophyllus*”]; *S. martini* H. Léveillé.

Leaf blade lanceolate, 1–3 × 0.5–1.2 cm, glabrous. Fl. Oct.

By rivers. Guizhou (Zhenning) [India].

65. *Strobilanthes latisejala* Hemsley, J. Linn. Soc., Bot. 26: 241. 1890.

薄萼马蓝 bao e ma lan

Herbs to 50 cm tall, perennial, isophyllous. Stems 4-angled, sulcate, glabrous. Petiole 1–2.5 cm, glabrous; leaf blade lanceolate to ovate-lanceolate, 2–6 × 1–2.5 cm, abaxially glabrous and paler, adaxially with a few scattered trichomes and abundant cystoliths, secondary veins 4–6 on each side of midvein, base cuneate and decurrent onto petiole, margin crenulate, apex acuminate. Inflorescences axillary, subcapitate, 1–2 cm, 2–4-flowered; peduncle 0–2 cm; bracts leaflike, ovate, 6–9 × 3–5 mm, persistent, glabrous, margin subentire, apex acute; bracteoles linear, 5–6 × ca. 2 mm, glabrous. Calyx 8–10 mm, 5-lobed almost to base; lobes ovate-elliptic, 6–10 × 3–5 mm, unequal with one larger than others, outside sparsely pilose, apex obtuse. Corolla pale blue, ca. 3.2 cm, slightly curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm then gradually widened to ca. 1 cm at mouth; lobes ovate, ca. 4 × 3 mm. Stamens 4; filaments glabrous, shorter pair ca. 4 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 2 × 1.2 mm, erect; pollen type 3. Ovary glabrous; style ca. 2.7 cm, glabrous. Capsule not seen.

- Forests. Hubei (Xingshan).

Strobilanthes latisejala is only known from the type and is possibly conspecific with the very variable *S. atropurpurea*, from which it can be distinguished by its distinctive broad sepals.

66. *Strobilanthes tibetica* J. R. I. Wood, Edinburgh J. Bot. 51: 262. 1994.

西藏马蓝 xi zang ma lan

Pteracanthus tibeticus (J. R. I. Wood) C. Y. Wu & C. C. Hu.

Subshrubs to 1.5 m tall, gregarious, probably pliestesial, nearly isophyllous. Stems slightly 4-angled, glabrous or obscurely bifariously pubescent. Petiole 1–3 cm, sparsely pilose; leaf blade ovate to elliptic, 7–14 × 3–9 cm, abaxially paler and subglabrous except for a few trichomes near base of midvein, adaxially green, subglabrous except for a few scattered short hispid trichomes, strigose or scurfy along midvein, and with conspicuous cystoliths, secondary veins 5 or 6 on each side of midvein, base narrowly cuneate and decurrent nearly to petiole base, margin strongly serrate, apex shortly acuminate and slightly falcate. Inflorescences axillary, spikes, 4–12 cm, second, sometimes reduced to single axillary flowers; rachis finely puberulent to gland-tipped pilose, straight or obscurely zigzag, winged, wings 0.2–1 mm wide; bracts glabrous; basal bracts leaflike, with a petiole to 4 mm, ovate, 1.5–2.5 cm, apex acuminate; apical bracts sessile, narrowly oblong-elliptic, 1–1.2 cm, apex acuminate; bracteoles oblong, 2.5–4 mm, apex obtuse. Flowers to 1.5 cm apart on rachis. Calyx 0.9–2 cm, apparently not accrescent, subequally 5-lobed to ca. 1 mm above base; lobes almost colorless, linear, glabrous or sparsely gland-tipped pilose, apex obtuse. Corolla violet, 3.2–4 cm, outside pubescent but silky gray in bud, inside glabrous; tube strongly inflated from near base then widened to ca. 1.5 cm at middle and finally bent to ca. 90° but not narrowed at mouth; lobes ovate, ca. 5 × 7 mm, apex rounded to slightly emarginate. Stamens 4, included; filaments ca. 2.5 mm, all equal in length, glabrous; anther

thecae oblong, ca. 1.5 mm. Ovary glabrous; style ca. 2 cm, glabrous or with a few trichomes. Capsule oblong, 1.1–1.2 cm, glabrous, 4-seeded, apex apiculate. Seeds oblong in outline, ca. 3 × 2 mm, covered with stiff white trichomes. Fl. Aug–Sep, fr. Oct–Nov.

Tsuga forests; 2300–2700 m. Xizang (Zayü) [India].

67. *Strobilanthes pterygorrhachis* C. B. Clarke, J. Linn. Soc., Bot. 25: 54. 1889.

翅轴马蓝 *chi zhou ma lan*

Subshrubs to 3.8 m tall, vigorous, subglabrous. Stems and branches weakly 4-angled. Petiole 2–9 cm, glabrous; leaf blade ovate, ca. 15 × 7.5 cm, glabrous, adaxially darker and with abundant cystoliths, base cuneate and shortly decurrent onto petiole, margin serrate, apex acute to shortly acuminate. Inflorescences terminal or axillary, spikes, secund; rachis 3–25 cm, slightly zigzag, strongly winged, glabrous; bracts at base of spike leaflike, petiolate, lanceolate, to 2 × 0.7 cm but diminishing in size apically to 6 × 3 mm; bracteoles linear-oblancoate, 5–10 mm. Flowers mostly paired, to 4 cm apart basally on rachis but somewhat confluent apically. Calyx 2.5–3.6 cm, subequally 5-lobed to near base; lobes narrowly lanceolate, 2.2–3.2 × ca. 0.3 cm, margin minutely ciliolate, apex narrowed into a finely acuminate or aristate point. Corolla yellow, ca. 3.5 cm, outside pubescent, inside glabrous except for trichomes retaining style; tube short, basally cylindric then abruptly widened and bent just below mouth. Filaments glabrous, shorter pair 3–4 mm, longer pair 5–6 mm; anther thecae oblong, 3–3.5 × ca. 1 mm. Ovary comose; style ca. 3 cm, glabrous. Capsule comose. Fl. Aug.

Moist places in forests; ca. 1800 m. Xizang (Médog) [India].

68. *Strobilanthes urophylla* Nees in A. Candolle, Prodr. 11: 192. 1847.

尾叶马蓝 *wei ye ma lan*

Pteracanthus urophyllus (Nees) Bremekamp; *Strobilanthes urophylla* var. *sikkimensis* C. B. Clarke.

Subshrubs, much branched, glabrous, anisophyllous. Stems 4-angled, glabrous. Petiole 0.8–1.6 cm; leaf blade narrowly ovate-elliptic, 5–14 × 1.5–5.5 cm, abaxially pale green, pubescent along veins, and with inconspicuous cystoliths, adaxially yellowish green, secondary veins 6–9 on each side of midvein, base cuneate to broadly cuneate and decurrent onto petiole, margin remotely serrate, apex shortly acuminate to caudate. Inflorescences axillary, short spikes; bracts leaflike, petiolate, ovate-elliptic, 0.8–4.5 cm, very persistent, abaxially with conspicuous cystoliths, pinnately veined, margin subentire, apex obtuse; bracteoles petiolate, obovate-spatulate, ca. 4 mm, persistent, subglabrous, 3-veined. Flowers in opposite pairs, 1–1.5 cm apart on rachis, in axils of leaflike bracts. Calyx 7–8 mm, pubescent, 5-lobed almost to base; lobes lanceolate with one longer than others, accrescent in fruit, apex acuminate. Corolla pale purple, 2–2.5 cm, ventricose, outside pubescent, inside subglabrous except for trichomes retaining style; tube basally cylindric and ca. 6 mm wide for ca. 5 mm then slightly bent and regularly widened to ca. 1.2 cm at mouth; lobes oblong, ca. 5 ×

4 mm, apex obtuse. Stamens 4, included; filaments hirsute, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2.5 × 1.2 mm; pollen type 3. Ovary comose; style ca. 1.7 cm, hirsute. Capsule ca. 1.4 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, pubescent; areola small. Fl. May–Jun, fr. Jul–Aug.

Evergreen broad-leaved forests; 1200–2000 m. Xizang (Médog) [India].

69. *Strobilanthes inflata* T. Anderson, J. Linn. Soc., Bot. 9: 476. 1867.

锡金马蓝 *xi jin ma lan*

Herbs 50–100 cm tall, branched, isophyllous. Stems straight or somewhat zigzag, glabrous, slightly 4-angled, sulcate, pubescent or with dense brown large-celled trichomes. Petiole 3–3.5(–7.5) cm, subglabrous, pubescent, or densely yellowish brown hirsute; leaf blade oblong-ovate, elliptic, or ovate, 5–20 × 1–10 cm, abaxially hirsute, pubescent, or subglabrous and with conspicuous cystoliths, adaxially pubescent or glabrous except brownish and whitish tomentose along veins, sparsely setose, densely yellowish brown hirsute on midvein, and with numerous cystoliths, secondary veins 6–8 on each side of midvein, base oblique and broadly rounded to cuneate and decurrent onto petiole, margin serrate to crenate, apex acuminate to caudate. Inflorescences spikes, 2.5–12(–21) cm, secund, sometimes reduced to 1 or 2 flower pairs; peduncle 1.5–3 cm; rachis usually geniculate at first node then straight or somewhat zigzag; bracts variable in size and shape with basalmost ones leaflike, with a 3–4 mm petiole, ovate to narrowly ovate, 2–3 × 0.8–1.3 cm, and margin serrate; apical bracts petiolate, obovate, elliptic, or ovate-spatulate, 0.6–3 × 0.3–1.2 cm, persistent, pubescent, margin usually with 1 or 2 teeth; bracteoles oblong to linear, 2–3.5 mm, apex rounded. Flowers 1–2 cm apart on rachis. Calyx 1.1–1.4 cm, white pilose with large-celled gland-tipped trichomes, 5-lobed to base; lobes linear, unequal, reflexed, glabrous in anthesis, sometimes gland-tipped pubescent in fruit, densely covered with white linear cystoliths, margin paler, apex acute. Corolla pinkish blue to blue, 3.5–4 cm, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindric and narrow for ca. 5 mm then abruptly widened to ca. 1.3 cm at mouth, just basal to mouth slightly narrowed and bent to ca. 90°; lobes oblong, ca. 5 × 6 mm. Stamens 4, included; filaments glabrous, shorter pair 3–4 mm and incurved, longer pair 5–6 mm; anther thecae oblong, ca. 2 × 1 mm; pollen type 3. Ovary comose; style ca. 1.8 cm, sparsely gland-tipped pubescent at base. Capsule brownish yellow, narrowly ellipsoid, 1.6–2 cm, glabrous, 4-seeded. Seeds orbicular in outline, ca. 3 mm in diam., villous; areola inconspicuous. Fl. Jun–Nov.

Evergreen broad-leaved forests, streamsides in shady places, forests, forest margins; 1700–3200 m. Xizang, Yunnan [Bhutan, India, Indonesia, Myanmar, Nepal].

- 1a. Stems, petioles, and inflorescences densely covered with long yellowish brown trichomes; leaf blade broadly ovate, 12–20 × 6–10 cm 69c. var. *aenobarba*

- 1b. Stems, petioles, and inflorescences
subglabrous or white pubescent; leaf
blade ovate-elliptic, less than 8×6 cm.
2a. Leaf blade white pubescent 69a. var. *inflata*
2b. Leaf blade subglabrous 69b. var. *gongshanensis*

69a. *Strobilanthes inflata* var. *inflata*

锡金马蓝(原变种) xi jin ma lan (yuan bian zhong)

Pteracanthus inflatus (T. Anderson) Bremekamp; *Strobilanthes wardii* W. W. Smith.

Stems, petioles, and inflorescences white pubescent. Leaf blade elliptic to ovate, ca. 5.5×3 cm. Fl. Jun–Nov.

Forests; ca. 1700 m. Xizang (Mêdog, Zayü), Yunnan [Bhutan, India, Myanmar, Nepal].

69b. *Strobilanthes inflata* var. *gongshanensis* (H. P. Tsui) J. R. I. Wood & Y. F. Deng, Bot. J. Linn. Soc. 150: 387. 2006.

贡山马蓝 gong shan ma lan

Pteracanthus gongshanensis H. P. Tsui, Acta Bot. Yunnan. 12: 277. 1990; *Strobilanthes unilateralis* J. R. I. Wood.

Stems, petioles, and inflorescences subglabrous. Leaf blade ovate-elliptic, $5\text{--}12 \times 1\text{--}4.5$ cm. Fl. Aug–Oct, fr. Dec.

Evergreen broad-leaved forests; 1900–2200 m. Yunnan (Gongshan) [Indonesia, Myanmar].

69c. *Strobilanthes inflata* var. *aenobarba* (W. W. Smith) J. R. I. Wood & Y. F. Deng, Bot. J. Linn. Soc. 150: 386. 2006.

铜毛马蓝 tong mao ma lan

Strobilanthes aenobarba W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 13: 185. 1921; *Pteracanthus aenobarbus* (W. W. Smith) C. Y. Wu & C. C. Hu.

Stems, petioles, and inflorescences densely covered with long yellowish brown trichomes. Leaf blade broadly ovate, $12\text{--}20 \times 6\text{--}10$ cm. Fl. Aug–Oct.

Streamsides in shady places, forest margins; 2300–3200 m. Xizang (Zayü), Yunnan [Indonesia, Myanmar].

70. *Strobilanthes congesta* Terao, Notes Roy. Bot. Gard. Edinburgh 40: 153. 1982.

密序马蓝 mi xu ma lan

Pteracanthus congestus (Terao) C. Y. Wu & C. C. Hu.

Subshrubs 0.6–1.8 m tall, anisophyllous. Stems subterete, whitish to brownish yellow pubescent with large-celled trichomes. Petiole 1–7 mm, densely hirsute; leaf blade ovate-lanceolate, $2\text{--}9 \times 0.8\text{--}3.5$ cm, smaller of pair ca. $2/3$ size of larger one, both surfaces brownish to yellow hirsute, secondary veins 4–7 on each side of midvein and inconspicuous, base attenuate, oblique, and shortly decurrent onto petiole, margin crenate and ciliate, apex acuminate and often falcate. Inflorescences axillary or terminal, spicate with 1–4 small capitula borne singly along rachis; capitula 2–8-flowered, to 4 cm apart; rachis 3–7 cm, often basally with a pair of sterile leaflike bracts so leaves sometimes appearing verticillate, densely white or yellow pi-

lose; bracts linear-ob lanceolate, $3\text{--}8 \times 0.8\text{--}1.5$ mm, persistent, pilose, apex obtuse; bracteoles ca. 6×1 mm, linear, white pilose. Calyx 5-lobed almost to base; lobes ovate to lanceolate, pilose on both surfaces except basally inside, abruptly narrowed at middle with an obtuse often apically recurved cauda $11\text{--}14 \times 1.5\text{--}5$ mm; one lobe ca. 2 mm longer than others. Corolla pale whitish purple, ca. 2.5 cm, curved, outside pubescent; tube basally narrow and cylindrical for ca. 6 mm then abruptly inflated and widened to ca. 1 cm at mouth; lobes oblong, ca. 4×3.5 mm. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair 5–6 mm, base pilose; anther thecae oblong, ca. 2×0.5 mm; pollen type 3. Ovary glabrous; style ca. 1.8 cm, pilose and gland-tipped pubescent. Capsule oblong, ca. 10×3 mm, glabrous, 4-seeded; seeds ovate in outline, ca. 3×2.5 mm, pubescent. Fl. Jul–Aug, fr. Dec.

Thickets, tropical forests; 1600–1800 m. Yunnan [Myanmar, ?Nepal].

Strobilanthes congesta is a very distinct species because of the form of its inflorescence and unique calyx.

71. *Strobilanthes larium* Handel-Mazzetti, Symb. Sin. 7: 893. 1936.

闭花马蓝 bi hua ma lan

Herbs to 1.5 m tall, isophyllous. Branches 4-angled, sulcate, silky gland-tipped pubescent. Petiole 2–5 cm, sulcate, subglabrous; leaf blade ovate-elliptic, $(5\text{--})7\text{--}12 \times (2\text{--})3\text{--}7$ cm, abaxially glabrous except pilose along midvein, glaucous, and with numerous cystoliths, adaxially green and subglabrous except for few large-celled multicellular trichomes along veins, secondary veins 6–8 on each side of midvein, base cuneate and decurrent onto petiole, margin dentate and ciliate, apex acuminate and falcate. Inflorescences axillary, spikes, (1–)3–10 cm; bracts oblong, $1.5\text{--}4 \times 0.2\text{--}0.5$ cm, variable in size and apically diminishing in size, abaxially densely covered with white large-celled multicellular trichomes especially toward base, margin subentire; bracteoles linear, ca. 4×1 mm, puberulent. Calyx 1–1.2 cm, 5-lobed almost to base; lobes unequal with one larger than others, outside puberulent, margin large-celled multicellular pubescent with gland-tipped trichomes. Corolla purplish, curved, 3.5–4 cm, outside densely whitish pubescent when young but glabrescent, inside densely pubescent when young but glabrescent except for trichomes below lobe bases; tube basally cylindrical and ca. 3 mm wide for ca. 5 mm then ventricose, bent to ca. 90° , and finally abruptly widened to ca. 1.3 cm at mouth; lobes oblong, ca. 5×4 mm, apex emarginate. Stamens 4, included; filaments glabrous, shorter pair 3–4 mm, longer pair 6–7 mm; anther thecae oblong, ca. 3×1 mm. Ovary glabrous; style 2.8–3 cm, apical part pilose. Capsule clavate, ca. 1.5 cm, glabrous except for pilose apex, 4-seeded. Seeds ca. 2×1.5 mm, lenticular, densely covered with scalelike trichomes; areola ca. 0.3 mm. Fl. May–Sep.

• By streams; 600–2700 m. Chongqing, Hubei, Hunan, Sichuan.

72. *Strobilanthes oresbia* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 196. 1918.

山马蓝 shan ma lan

Goldfussia grandissima H. P. Tsui; *Pteracanthus grandis-simus* (H. P. Tsui) C. Y. Wu & C. C. Hu; *P. oresbius* (W. W. Smith) C. Y. Wu & C. C. Hu; *Strobilanthes grandissima* (H. P. Tsui) J. R. I. Wood.

Herbs to 2 m tall, erect, nearly isophyllous. Stems 4-angled, densely white pubescent with gland-tipped trichomes, glabrescent. Petiole 2–13 cm, gland-tipped pubescent, glabrescent, apically winged; leaf blade ovate to orbicular, 7–22 × 4–18 cm, pubescent especially along veins, cystoliths abundant on both surfaces, secondary veins 9–11 on each side of midvein, base cuneate, rounded, or sometimes subcordate and decurrent onto petiole, margin deeply dentate or serrate, apex acute to acuminate. Inflorescences axillary, spikes, to 15 cm, secund, sometimes reduced to single flowers; peduncle 0.5–7 cm, densely gland-tipped pubescent; rachis somewhat zigzag; bracts at base of spike leaflike, petiolate, ovate, to 4 × 2 cm, gland-tipped pubescent, base cuneate, margin serrate, apex obtuse; bracts toward spike apex lanceolate, diminishing apically to ca. 10 × 1 mm, margin entire, apex obtuse; bracteoles linear-oblong, ca. 7 × 1 mm, gland-tipped pubescent, apex obtuse. Flowers usually 1 per node, 0.8–2.5 cm apart on rachis. Calyx 1.2–2.1 cm, densely gland-tipped pubescent, 5-lobed almost to base; lobes linear-oblong, apex obtuse; one lobe to 2 mm longer than others. Corolla purplish blue, 4–5 cm, ventricose, outside sparsely white pubescent, inside pubescent; tube basally cylindrical and narrow for ca. 5 mm then bent to ca. 90°, strongly ventricose, and widened to ca. 1.5 cm at mouth; lobes oblong, ca. 6 × 5 mm, apex obtuse. Stamens 4; filaments glabrous, shorter pair ca. 2.5 mm, longer pair ca. 4 mm; anther thecae oblong, ca. 2.5 × 1 mm; pollen type 4. Ovary glabrous; style ca. 2.2 cm, shortly pilose. Capsule oblong, ca. 15 × 2–3 mm, glabrous except for very few stalked glands near apex, 4-seeded. Seeds blackish brown, elliptic in outline, 3–3.5 × ca. 2.5 mm, densely pilose; areola very small. Fl. Jul–Sep, fr. Oct–Dec.

Moist alpine meadows and forests; 1600–3300 m. Chongqing, Sichuan, Xizang (Zayü), Yunnan [India, Myanmar].

73. *Strobilanthes flexa* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 186. 1922.

城口马蓝 cheng kou ma lan

Pteracanthus flexus (Benoist) C. Y. Wu & C. C. Hu.

Herbs to 60 cm tall, isophyllous. Stems 4-angled, glabrescent. Petiole 1–5 cm, thinly pubescent; leaf blade ovate to elliptic, 3.5–15 × 3–7 cm, both surfaces glabrous except basally on abaxial midvein, cystoliths apparently absent, secondary veins 6–8 on each side of midvein, base cuneate and decurrent onto petiole, margin coarsely dentate or serrate, apex acute. Inflorescences axillary or terminal, spikes, 3–6 cm, lax, sometimes reduced to a single flower in axil of apical leaves; rachis gland-tipped pilose; bracts leaflike, oblong-oblong, 1.5–2 × 0.2–0.4 cm, apically diminishing in size, gland-tipped pubescent, apex acute to acuminate; bracteoles oblong, 7–8 × ca. 1 mm, gland-tipped pubescent, apex obtuse. Flowers basally to 1 cm apart on rachis but apically becoming congested. Calyx 0.8–1.2 cm, accrescent in fruit, gland-tipped pubescent, 5-lobed almost to base; lobes linear-oblong, 7–10 × ca. 1 mm, subequal, apex obtuse. Corolla purplish blue, 3.5–4 cm, outside pilose,

inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then abruptly inflated, bent to ca. 90° above middle, and finally widened to ca. 1.4 cm at mouth; lobes ovate, ca. 5 × 5 mm, apex rounded. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 4 mm; anther thecae oblong, ca. 2 × 1 mm, erect; pollen type 4. Ovary comose; style ca. 3.2 cm, sparsely pilose. Capsule oblong, 1.5–1.8 cm, apically gland-tipped pubescent, 4-seeded. Fl. Aug–Sep, fr. Oct–Dec.

• Forests; 1400–3600 m. Chongqing, Guizhou, Hubei, Sichuan, Yunnan.

Strobilanthes flexa appears to intergrade with *S. versicolor* and may just be a more robust form.

74. *Strobilanthes versicolor* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 163. 1912.

变色马蓝 bian se ma lan

Pteracanthus versicolor (Diels) H. W. Li.

Herbs to 50(–100) cm tall, with several annual stems arising from a perennial base, isophyllous. Stems sparsely to densely pubescent, glabrescent. Petiole (0–)1–3 cm, pubescent; leaf blade obovate to suborbicular, 2.5–6 × 1–3.5 cm, both surfaces thinly pilose especially on veins, densely covered with cystoliths, secondary veins 4–6 on each side of midvein, base broadly cuneate and decurrent onto petiole, margin coarsely serrate, apex acute. Inflorescences terminal or axillary, spikes, 4–15 cm, simple or sparingly branched; bracts leaflike, 1.2–3.5 × 0.3–1 cm, persistent, apically diminishing in size, thinly pilose; basal bracts petiolate, suborbicular to oblong-elliptic, margin dentate; apical bracts sessile, narrowly oblong-elliptic, margin entire; bracteoles linear-oblong, 4–8 × 1–2 mm, pilose. Flower pairs 1–1.5 cm apart on rachis even apically. Calyx ca. 1.5 cm, 5-lobed almost to base; lobes linear, 10–11 × ca. 1 mm, subequal, pilose with large-celled trichomes, apex obtuse. Corolla white or blue, 3.5–4 cm, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2.5 mm wide for 1–1.5 cm then abruptly bent to ca. 90° above middle and finally widened to ca. 1.5 cm at mouth; lobes ovate, ca. 6 × 5 mm, apex rounded. Stamens 4, included; filaments pilose, shorter pair ca. 5 mm, longer pair ca. 7 mm; anther thecae oblong, 2–2.5 × ca. 0.8 mm; pollen type 6. Ovary comose; style ca. 2.8 cm, pilose. Capsule ca. 1.4 cm, gland-tipped pubescent, 4-seeded. Seeds ovate in outline, ca. 3 × 3 mm, appressed pubescent. Fl. May–Aug.

• Grasslands at forest margins; 2800–3300 m. Sichuan, S Xizang, Yunnan.

75. *Strobilanthes forrestii* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 162. 1912.

腺毛马蓝 xian mao ma lan

Pteracanthus forrestii (Diels) H. P. Tsui; *P. rotundifolius* (Benoist) Bremekamp; *Strobilanthes panpienkaiensis* H. Léveillé; *S. rotundifolia* Benoist.

Herbs to 30–75 cm tall, isophyllous. Stems 4-angled, thinly pilose with gland-tipped trichomes, glabrescent, basally

woody. Leaves subsessile; leaf blade ovate to rarely ovate-oblong, 2–5 × 1.2–3 cm, both surfaces thinly pilose, adaxially with cystoliths, secondary veins ca. 4 on each side of midvein, base rounded, cordate, or rarely cuneate, margin crenate to subentire, apex acute to obtuse. Inflorescences terminal or very rarely also from apical leaf axils, spikes, 5–15 cm; rachis pilose with gland-tipped trichomes; bracts leaflike, pilose with gland-tipped trichomes; basal bracts ovate-elliptic, 1–3 × 1–2 cm, margin obscurely crenate; apical bracts lanceolate, 7–10 × ca. 3 mm, margin entire; bracteoles linear to narrowly oblong, 6–11 × ca. 1 mm, pilose with gland-tipped trichomes. Flowers 1–2.5 cm apart on rachis. Calyx 0.8–1.2 cm, 5-lobed almost to base; lobes linear with one ca. 2 mm longer than others, pilose with gland-tipped trichomes. Corolla blue to purple, 3.2–4 cm, curved, outside with a few trichomes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 5 mm then bent to ca. 90° and widened to ca. 1.5 cm at mouth; lobes ovate, ca. 6 × 7 mm, apex obtuse. Stamens 4, included; shorter filament pair ca. 2 mm; longer filament pair ca. 8 mm, shortly pubescent; anther thecae oblong, ca. 2 × 0.8 mm; pollen type 3. Ovary gland-tipped puberulent at tip; style ca. 2.8 cm. Capsule oblong, ca. 1.2 cm, apically gland-tipped pilose, 4-seeded. Seeds dark brown, ovate in outline, ca. 3 mm, pubescent; areola white, small. Fl. Jul–Aug.

- Forests, grass slopes; ca. 3000 m. Yunnan.

Strobilanthes forrestii was misidentified as *S. extensa* (*Pteracanthus extensus*) by Handel-Mazzetti (Symb. Sin. 7: 895. 1936), C. Y. Wu (Index Fl. Yunnan. 2: 1682. 1984), and H. P. Tsui and C. C. Hu (FRPS 70: 136. 2002; Fl. Yunnan. 16: 696. 2006).

76. *Strobilanthes lachenensis* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 465. 1884.

白毛马蓝 bai mao ma lan

Championella xanthantha (Diels) Bremekamp; *Pteracanthus lachenensis* (C. B. Clarke) Bremekamp; *P. leucotrichus* (Benoist) C. Y. Wu & C. C. Hu; *Strobilanthes leucotricha* Benoist; *S. xanthantha* Diels.

Herbs 30–100 cm tall, isophyllous. Stems erect, basally glabrescent, apically pubescent. Petiole 0.5–3.5 cm, thinly pubescent to glabrescent; leaf blade ovate, obovate, or broadly elliptic, 3–11 × 2–6.5 cm, both surfaces thinly white pubescent especially along veins, secondary veins 5–9 on each side of midvein, base cuneate and often decurrent onto petiole, margin serrate to crenate, apex acute to shortly acuminate. Inflorescences axillary or terminal, spikes, 3–10 cm, often forming a diffuse panicle of spikes; rachis gland-tipped pilose; bracts variable in size and shape; basal bracts leaflike, sessile, ovate, 2–5 × 0.5–2 cm, persistent, margin often toothed; apical bracts oblong to sometimes elliptic, 5–12 × 1–2 mm, persistent until flowers fall; bracteoles linear, 4–5 × ca. 1 mm, white gland-tipped pilose. Flowers basally to 2.5 cm apart on rachis but apically congested. Calyx 0.8–1.6 cm, accrescent in fruit, gland-tipped pilose, 5-lobed almost to base; lobes linear, 7–12 × ca. 1 mm, one longer and becoming spatulate. Corolla blue, 3–3.6 cm, curved, outside pubescent on lobes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm, slightly bent at mouth, and gradually

widened to ca. 1.2 cm at mouth; lobes ovate, ca. 4 × 4 mm. Stamens 4, included; shorter filament pair 2–3 mm, glabrous; longer filament pair 7–8 mm, sparsely pilose; anther thecae oblong, ca. 2 × 1.3 mm, erect; pollen type 3. Ovary comose; style 2.7–3.2 cm, sparsely gland-tipped pilose. Capsule 1.1–1.4 cm, gland-tipped pilose at tip, 4-seeded. Seeds ovate in outline, ca. 3 × 2 mm, densely appressed pubescent. Fl. Jun–Oct.

Forests; 1800–3400 m. Sichuan, Xizang (Dinggyê), Yunnan [Bhutan, India, Nepal].

Strobilanthes lachenensis was incorrectly reported as *Pteracanthus urticifolius* (Kuntze) Bremekamp by H. W. Li (Fl. Xizang. 4: 179. 1985).

77. *Strobilanthes nemorosa* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 97. 1922.

琴叶马蓝 qin ye ma lan

Difflugossa muliensis H. P. Tsui; *Pteracanthus nemorosus* (Benoist) C. Y. Wu & C. C. Hu; *P. panduratus* (Handel-Mazzetti) C. Y. Wu & C. C. Hu; *Strobilanthes pandurata* Handel-Mazzetti.

Herbs to 60 cm tall, much branched, isophyllous. Stems 4-angled, sulcate, pubescent, basally woody. Leaves sessile or with petiole to 1.5 cm; leaf blade lanceolate to oblong-elliptic, occasionally basally pandurate, 5–15(–20) × 1.5–6 cm, both surfaces sparsely pilose but glabrescent, adaxially dark green and densely covered with cystoliths, secondary veins 6–12 on each side of midvein, base rounded to attenuate, margin remotely serrate, apex acuminate. Inflorescences terminal or axillary, spikes, usually several spikes forming a panicle; rachis densely pilose, with gland-tipped trichomes; basal bracts leaflike, ovate-lanceolate, to 6 × 2 cm; apical bracts linear to narrowly oblong-elliptic, 7–12 × 1–3 mm, persistent, pilose with gland-tipped trichomes; bracteoles linear, ca. 5 × 1 mm, pilose with gland-tipped trichomes. Calyx 1–1.5 cm, pilose with gland-tipped trichomes, 5-lobed almost to base; lobes linear with one longer than others, apex obtuse. Corolla blue, 3–3.7 cm, ventricose, outside sparsely pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 5 mm then gradually widened to ca. 1 cm at mouth; lobes oblong, ca. 5 × 4 mm, apex rounded. Stamens 4, included; shorter filament pair ca. 4 mm; longer filament pair ca. 6 mm, base pilose; anther thecae oblong, ca. 2.5 mm; pollen type 3. Ovary comose; style 2.8–3.2 cm, glabrous. Capsule clavate, ca. 1.6 cm, apically gland-tipped pilose, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2 mm, densely appressed pubescent. Fl. Aug.

- *Pinus-Quercus* forests, thickets; 1900–3400 m. Sichuan, Yunnan.

Strobilanthes nemorosa is similar to *S. lachenensis*, differing in little more than leaf shape. It may not be a distinct species.

78. *Strobilanthes extensa* (Nees) Nees in A. Candolle, Prodr. 11: 191. 1847.

棒果马蓝 bang guo ma lan

Goldfussia extensa Nees in Wallich, Pl. Asiat. Rar. 3: 88. 1832; *Pteracanthus claviculatus* (C. B. Clarke ex W. W. Smith) C. Y. Wu ex C. C. Hu; *P. duclouxii* (C. B. Clarke ex Benoist) C.

Y. Wu & C. C. Hu; *P. extensus* (Nees) Bremekamp; *Strobilanthes claviculata* C. B. Clarke ex W. W. Smith; *S. duclouxii* C. B. Clarke ex Benoist.

Subshrubs 0.5–2 m tall, much branched, anisophyllous. Stems erect, glabrous or pilose. Petiole (0–)5–10 mm, narrowly winged, sparsely pubescent; leaf blade ovate, lanceolate, or oblong-lanceolate, 4–15 × 1–5 cm, both surfaces with prominent cystoliths, abaxially subglabrous to pilose, adaxially glabrous or sparsely pilose, secondary veins ca. 5 on each side of midvein, base cuneate, margin remotely serrate, apex acuminate and falcate. Inflorescences axillary or terminal, spikes, to 5 cm, very lax, 2–6-flowered; peduncle and rachis densely hirsute; sterile bracts intergrading with leaves but sessile, ovate to lanceolate, to 6 × 2.5 cm, glabrous or pubescent, base cuneate to cordate; floral bracts ovate to linear, 3–6 × 1.5–4 mm, persistent, gland-tipped pilose; bracteoles oblong to elliptic, ca. 4 × 1–3 mm, gland-tipped pilose. Flowers usually paired, basally to 4 cm apart on rachis but apically closer. Calyx 1–2 cm, strongly accrescent in fruit, gland-tipped pilose, 5-lobed almost to base; lobes oblong-obovate, one lobe 2–3 mm longer than others, apex spatulate and darker green. Corolla pale whitish purple to violet, 3.2–4 cm, ventricose, outside pubescent only on lobes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1.2 mm then gradually widened to ca. 1.5 cm and bent at mouth; lobes orbicular, ca. 5 mm in diam. Stamens 4, included; filaments glabrous, shorter pair 3–4 mm, longer pair 7–8 mm; anther thecae oblong, ca. 2.5 × 1 mm, erect; pollen type 3. Ovary glabrous, apex with numerous sessile glands; style ca. 3.2 cm, sparsely pilose. Capsule clavate, 10–16 × ca. 2 mm, apically thinly gland-tipped pilose, 4-seeded. Seeds ovate in outline, ca. 3 × 2.5 mm, pubescent; areola small. Fl. Aug–Oct, fr. Oct–Dec.

Mixed forests; 1900–2200 m. Sichuan, Yunnan [Bhutan, India, ?Nepal].

Strobilanthes extensa is very variable in leaf blade, bract, and bracteole shape and in the density of the indumentum.

79. *Strobilanthes spiciformis* Y. F. Deng & J. R. I. Wood, J. Trop. Subtrop. Bot. 18: 473. 2010.

黄连山马蓝 huang lian shan ma lan

Subshrubs to 50 cm tall, anisophyllous. Stems to 5 mm in diam., young part sulcate and angled, subglabrous apart from pubescent at nodes, basally woody. Leaves petiolate or apically subsessile; petiole (0.5–)1.3–2.3(–2.5) cm, glabrous; leaf blade ovate, smaller of pair 4–7 × 2–3.5 cm and larger one 9–15 × 3–6 cm, both surfaces glabrous, adaxially with prominent cystoliths, secondary veins 5 or 6 on each side of midvein, base cuneate and decurrent onto petiole, margin serrate, apex acuminate. Inflorescences terminal, spikes, 4–9 cm; rachis 4-angled, gland-tipped pilose; bracts ovate, ca. 8 × 5 mm, deciduous as flowers open, abaxially sparsely gland-tipped pilose, adaxially glabrous, apex rounded; bracteoles absent. Calyx 1–1.6 cm; lobes linear-oblong, 8–16 × 1–2 mm, unequal with one distinctly longer than others, gland-tipped pilose, margin entire and ciliate, apex acute. Corolla color not noted, probably bluish, ca. 2.5 cm, straight, outside pubescent in bud but soon glabrescent, inside glabrous; tube basally cylindrical and ca. 2 mm

wide for ca. 1 cm then gradually widened to ca. 8 mm at mouth; lobes orbicular, ca. 3 × 3 mm, apex obtuse. Stamens 4, included; filaments pilose, shorter pair ca. 5 mm, longer pair ca. 2 cm; anther thecae oblong, ca. 2 × 1 mm; pollen type 3. Ovary ca. 2.5 × 0.8 mm, glabrous except for a few gland-tipped pilose trichomes at tip; style ca. 2 cm, glabrous. Capsule oblong, 1.5–2 × 0.3–0.4 cm, glabrous except for a few gland-tipped pilose trichomes at tip and along ribs toward tip, 4-seeded. Seeds ovate to suborbicular in outline, ca. 3 × 3 mm, pilose. Fl. Aug–Oct.

• Moist places in forests; 1200–2400 m. Yunnan.

80. *Strobilanthes pseudocollina* K. J. He & D. H. Qin, Acta Phytotax. Sin. 45: 701. 2007.

阳朔马蓝 yang shuo ma lan

Herbs to 50 cm tall, ascending, weakly anisophyllous. Stems terete, lenticellate, glabrous. Petiole 0.5–2.5 cm, sulcate; leaf blade ovate to lanceolate-ovate, 2.5–13 × 1.5–6 cm, smaller of pair 1/2–2/3 size of larger one, glabrous, cystoliths prominent, secondary veins 4–8 on each side of midvein, base obtuse to cuneate, margin subentire to sparsely crenulate, apex acuminate. Inflorescences from terminal leaf axils, spikes, (1–)3–11 cm, 4–16-flowered; bracts subspatulate, 6–10 × 1.5–3 mm, leathery, glabrous, margin ciliate, apex acute; bracteoles lanceolate, ca. 4 × 0.6 mm, margin ciliate. Flower pairs 0.5–1.5 cm apart on rachis. Calyx 0.9–1.1 cm, 5-lobed almost to base; lobes linear, ca. 1 mm wide, unequal, margin ciliate. Corolla purple, ca. 4.5 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 1.5 mm wide for ca. 1 cm then gradually widened to ca. 1.5 cm at mouth; lobes suborbicular, 7–8 × 8–9 mm, apex obtuse. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair ca. 6 mm, sparsely hirsute; anther thecae oblong, ca. 2.5 × 1 mm, apiculate; connective shortly extended; pollen type 3. Ovary glabrous; style ca. 3 cm, glabrous. Capsule 1–1.5 cm, glabrous. Seeds ovate in outline, ca. 4 × 2 mm, densely pubescent. Fl. Sep–Oct, fr. Oct–Nov.

• Forests on limestone hills; 100–300 m. Guangxi (Yangshuo).

81. *Strobilanthes longzhouensis* H. S. Lo & D. Fang, Guihaia 17: 34. 1997.

龙州马蓝 long zhou ma lan

Perilepta longzhouensis (H. S. Lo & D. Fang) C. Y. Wu & C. C. Hu.

Shrubs to 2.5 m tall, slightly anisophyllous. Stems basally gray, apically purplish black, glabrous. Petiole 0.5–1.5 cm, glabrous; leaf blade lanceolate-ovate to oblong-elliptic, 3–15.5 × 2.5–6 cm, leathery, glabrous, cystoliths numerous, secondary veins 5–7(–9) on each side of midvein and prominent on both surfaces, base cuneate, margin serrulate to undulate, apex acuminate to acute. Inflorescences axillary, branched spikes, 1.5–5 cm, to 4 per leaf axil, sometimes becoming compound and paniculate; bracts ovate, 3–4 × ca. 2 mm, persistent, abaxially glabrous with numerous cystoliths, margin ciliate, apex acute; bracteoles ca. 6 × 1.2 mm. Flowers 1 sterile per node. Calyx 8–10 mm, with prominent cystoliths, 2-lipped; lower lip 2-lobed, upper lip 3-lobed; lobes lanceolate-triangular, ca. 6 mm, mar-

gins white ciliolate. Corolla pale purple, 3–3.5 cm, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then gradually widened to ca. 1.5 cm at mouth; lobes broadly obovate, ca. 5 mm, apex emarginate. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 7 mm, villous; anther thecae oblong, ca. 2 mm; pollen type 3. Ovary glabrous; style ca. 2 cm, basally villous. Capsule oblong, 1.2–1.4 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 2.5 × 2.5 mm, densely covered with appressed trichomes. Fl. Sep–Dec, fr. Dec–Feb.

Hilly limestone areas; 200–500 m. Guangxi, Hainan [Vietnam].

82. *Strobilanthes cystolithigera* Lindau, Bull. Herb. Boissier 5: 651. 1897.

串花马蓝 chuan hua ma lan

Pteracanthus botryanthus (D. Fang & H. S. Lo) C. Y. Wu & C. C. Hu; *Strobilanthes botryantha* D. Fang & H. S. Lo; *S. myriostachya* D. Fang & H. S. Lo.

Subshrubs 1.5–3.5 m tall, isophyllous, drying green. Stems 4-angled, sulcate, glabrous. Petiole 0.5–2 cm, sulcate; leaf blade narrowly elliptic, narrowly ovate, or rarely ovate-elliptic, (2–)4–17 × 1.5–4.5 cm, glabrous, densely covered with linear cystoliths, secondary veins 4–6 on each side of midvein, base cuneate and decurrent onto petiole, margin subentire to irregularly crenate, apex acuminate. Inflorescences axillary, spikes, 2–6(–12) cm, sometimes branched, (2–)8–14-flowered; peduncle 0.5–1.5 cm; bracts elliptic, 4–6 × 3–4 mm, persistent, abaxially with prominent cystoliths and frequently a single black squamate gland, margin ciliolate, apex obtuse to acute; bracteoles ovate-lanceolate, ca. 5 × 1 mm, glabrous except for ciliolate margin, densely covered with cystoliths, apex acute. Flowers in opposite pairs, ca. 0.5 mm apart on rachis. Calyx 8–10 mm, subequally 5-lobed to base; lobes linear-lanceolate, 5–6 × ca. 1 mm, basally overlapping, glabrous, apex obtuse. Corolla purple, 3–4.5 cm, slightly curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for ca. 1 cm then gradually widened to ca. 1.8 cm at mouth; lobes broadly ovate, ca. 6 × 7 mm, apex rounded. Stamens 4, included; filaments pilose, shorter pair ca. 2 mm, longer pair ca. 5 mm; anther thecae oblong, ca. 2 × 1 mm; pollen type 3. Ovary glabrous; style ca. 2.8 cm, hirsute; stigma glabrous. Capsule oblong, ca. 1.7 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 1 cm, pilose; areola small, glabrous. Fl. Sep–Nov, fr. Dec.

Ravines or streambanks on limestone hills; 800–1200 m. Guangxi, Hainan, Yunnan [Vietnam].

83. *Strobilanthes abbreviata* Y. F. Deng & J. R. I. Wood, Bot. J. Linn. Soc. 150: 377. 2006.

短尖马蓝 duan jian ma lan

Shrubs to 3 m tall, isophyllous, drying green. Stems terete, ca. 9 mm in diam., sulcate, striate, glabrous; bark dull brown, smooth. Petiole 1–2.5 cm, glabrous; leaf blade oblong-elliptic, 6–25 × 2.5–9 cm, both surfaces glabrous and with numerous small cystoliths, abaxially olive-green, adaxially dark green,

base long attenuate and decurrent onto petiole, margin serrate, apex tapered, long acuminate, and sometimes falcate. Inflorescences axillary, spikes, 2–14 cm, basally rarely with a reduced second spike, usually some forming a 30–50 cm leafless panicle of spikes; peduncle 1–3 mm; rachis glabrous; bracts broadly oblong-obovate, 5–7 × 3–4 mm, concave, rigid, persistent into fruit, abaxially densely covered with cystoliths and dotted with small sessile brownish glands and often with larger sticky gland-tipped patches along midvein, apex abruptly truncate and with a short deciduous mucro; bracteoles lanceolate to oblong-lanceolate, 10–13 × 1–2 mm, slightly shorter than calyx, concave, rather rigid, glabrous or (rarely) scurfy along margin, abaxially densely covered with cystoliths and with scattered sessile glands sometimes becoming stipitate in fruit, apex obtuse. Flowers arranged in opposite pairs, both usually fertile, basally to 1 cm apart on rachis, apically confluent. Calyx 1.2–1.5 cm, slightly accrescent in fruit, subequally 5-lobed to just above base; lobes narrowly lanceolate, 10–14 × 1–2 mm, glabrous except for apical glands that sometimes become stipitate, outside non-glandular except for a few sessile glands near apex, densely covered with cystoliths, apex acute to acuminate. Corolla bluish purple, 4–4.5 cm, sometimes apically bent, outside glabrous; tube basally cylindrical and ca. 1.5 mm wide for 7–8 mm then ventricose and widened to ca. 1.5 cm at mouth; lobes ovate, ca. 5 × 5 mm. Stamens 4, included; filaments setose, shorter pair ca. 2 mm, longer pair ca. 4 mm; anther thecae narrowly oblong, ca. 3 × 0.5 mm; pollen type 3. Ovary comose; style ca. 2.5 cm, densely villous. Capsule oblong, 17–18 × ca. 3 mm, comose with a few trichomes, 4-seeded. Seeds ovate in outline, flattened, densely pilose; areola small, glabrous. Fl. Jun–Oct, fr. Dec–Mar.

Forests by streams; 200–1500 m. Yunnan [Cambodia, India, Myanmar, Thailand, Vietnam].

84. *Strobilanthes biocollata* Y. F. Deng & J. R. I. Wood, Novon 20: 406. 2010.

湖南马蓝 hu nan ma lan

Subshrubs 0.8–2 m tall, gregarious, anisophyllous. Stems subterete, bisulcate, glabrous. Petiole 1–5 cm, sulcate, glabrous; leaf blade oblong-elliptic to elliptic, smaller of pair 6–12 × 2–4 cm and larger ones 13–26 × 4–8 cm, both surfaces glabrous and densely covered with cystoliths, secondary veins 5–10 on each side of midvein and prominent on both surfaces, tertiary veins prominent, base narrowly cuneate, margin serrate, apex acuminate. Inflorescences axillary, simple spikes, (3–)7–10 cm, solitary, leafless; rachis glabrous; bracts ovate, 3.5–5 × 2.5–3 mm, glabrous, abaxially with 2 swollen bulges resembling eyes, apex long acuminate to mucronate; bracteoles ovate-oblong, ca. 4 × 2 mm, somewhat fragile and caducous, glabrous, apex acuminate to mucronate. Flowers in opposite pairs, 1–2 cm apart on rachis. Calyx 1–1.2 cm, sparsely pubescent when young, glabrescent, subequally 5-lobed almost to base; lobes yellowish brown, lanceolate, 1-veined, apex long acuminate. Corolla purplish blue, 3.5–4 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for 6–11 mm then bent to ca. 90° and gradually widened to ca. 2 cm at mouth; lobes ovate, ca. 4 × 7 mm, apex emarginate. Stamens 4, included; filaments pilose, shorter pair ca. 3 mm, longer pair ca. 1 cm; anther thecae oblong, ca. 3 × 1.2 mm;

pollen type 3. Ovary ca. 3 mm, glabrous; style ca. 2.8 cm. Capsule clavate, 1.5–2 cm, glabrous, 4-seeded. Seeds ca. 3 × 3 mm, lenticular, densely appressed pubescent; areola small. Fl. Jul–Oct, fr. Nov.

• On rocks by streams; 200–800 m. Guangdong, Guangxi, Hunan.

85. *Strobilanthes longespicata* Hayata, Icon. Pl. Formosan. 9: 83. 1920.

长穗马蓝 chang sui ma lan

Semnostachya longespicata (Hayata) C. F. Hsieh & T. C. Huang.

Shrubs 1.2–2 m tall, much branched, drying green. Branches ± 4-angled, sulcate, glabrous. Petiole 1–3 cm, sulcate, glabrous; leaf blade lanceolate to oblong-oblancheolate, 7–20 × 2–6 cm, glabrous, both surfaces with abundant cystoliths, secondary veins 6–10 on each side of midvein, base attenuate, margin remotely serrate, apex acute to shortly acuminate. Inflorescences axillary, spikes, (5–)10–15 cm, simple or less commonly branched; peduncle and rachis pubescent; bracts narrowly ovate to lanceolate, (5–)10–13 × (3–)6–7 mm, glabrous, cystoliths prominent, base truncate, apex acuminate; bracteoles linear-lanceolate, 9–11 × ca. 2 mm, scurfy-pubescent, apex acuminate. Flowers in opposite pairs, basally ca. 1 cm apart on rachis but apically imbricate. Calyx 5-lobed almost to base, accrescent in fruit; lobes linear-lanceolate, 9–15 × 2–3 mm, scurfy-pubescent, prominently 1-veined, margin ciliate, apex acuminate. Corolla pale purple, 4.5–5 cm, straight or slightly bent, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1 cm then gradually widened to 1.5–2 cm at mouth; lobes oblong, ca. 8 × 7 mm, subequal, apex emarginate. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 8 mm; anther thecae oblong, 2–2.5 × ca. 1 mm; pollen type 3. Ovary cylindrical-oblong, apically slightly hispid; style filiform, 3–3.2 mm, hispid. Capsule linear, ca. 1.7 cm, glabrous, 4-seeded. Seeds suborbicular in outline, ca. 3 mm in diam., flattened. Fl. Sep–Dec, fr. Feb–May.

• Forests; 200–1000 m. Taiwan.

86. *Strobilanthes myura* Benoist, Bull. Mus. Natl. Hist. Nat. 28: 95. 1922.

鼠尾马蓝 shu wei ma lan

Shrubs, drying green. Stems subterete, glabrous. Petiole 1–2.5 cm, glabrous; leaf blade ovate to elliptic, to 7–16 × 3–6 cm, glabrous, adaxially with cystoliths, secondary veins 8–11 on each side of midvein, base cuneate, margin crenate-dentate, apex acuminate. Inflorescences axillary, spikes, 5–8 cm; bracts ovate-triangular, 6–9 × ca. 2 mm, glabrous, midvein abaxially lined by cystoliths, margin sparsely ciliate, apex acuminate; bracteoles narrowly ovate, ca. 3.5 × 1 mm, margin sparsely ciliate, apex acuminate. Flowers basally ca. 1.5 cm apart on rachis but apically somewhat confluent. Calyx 5-lobed to base; lobes lanceolate, ca. 7 × 1 mm, equal, margin minutely ciliate, apex acuminate and shortly apiculate. Corolla purple, 2.5–3.4 cm, outside glabrous, inside glabrous except for trichomes retaining

style; tube basally cylindrical and narrow for ca. 5 mm then bent and abruptly widened to 1–1.2 cm at mouth; lobes oblong-ovate, ca. 5 × 4 mm. Stamens 4, included; filaments pilose, shorter pair ca. 4 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 2 × 1 mm; pollen type 3. Ovary sparsely pilose; style ca. 2.8 cm, sparsely pilose. Capsule unknown. Fl. Jul.

• Thickets; 600–800 m. Guizhou (Dushan).

87. *Strobilanthes guangxiensis* S. Z. Huang, Guihaia 6: 179. 1986.

广西马蓝 guang xi ma lan

Pteracanthus guangxiensis (S. Z. Huang) C. Y. Wu & C. C. Hu.

Herbs to 1 m tall, perennial, anisophyllous. Stems erect or ascending, densely pubescent, soon glabrescent. Petiole 0.3–3.5 cm, densely pubescent; leaf blade elliptic, smaller of pair 4–9 × 2.3–4.5 cm and larger one 9–14(–18) × 3.3–6(–8) cm, abaxially pale green and slightly pubescent, adaxially green, glabrous, and densely covered with prominent ca. 0.5 mm cystoliths, secondary veins 4–8 on each side of midvein, base cuneate, margin entire or slightly undulate, apex acuminate. Inflorescences axillary or terminal, spikes, 4–8 cm; peduncle ca. 4 cm, densely pubescent; rachis densely pubescent, usually with 2–6 nodes; bracts oblong to lanceolate, 10–13 × 2–3 mm, persistent, abaxially pubescent, adaxially glabrous, margin ciliate, apex acuminate to caudate; bracteoles oblong to lanceolate, 11–16 × 2–3 mm, abaxially pubescent, adaxially glabrous, margin ciliate, apex acuminate to caudate. Flowers 0.8–1.2 cm apart on rachis. Calyx ca. 1 cm, 5-lobed almost to base; lobes linear, ca. 9 × 1 mm, equal, outside pubescent, inside glabrous, margin ciliate from middle apically, apex acute. Corolla purple, 3.5–4 cm, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1.2 cm then gradually widened to ca. 1.4 cm at mouth; lobes oblong, ca. 5 × 5 mm, unequal, apex emarginate. Stamens 4, included; filaments glabrous, shorter pair ca. 3 mm, longer pair ca. 6 mm; anther thecae oblong, 2.5–3.5 × ca. 2 mm. Ovary oblong, ca. 3 mm, pilose at tip; style 2.5–3 cm, villous; stigma linear, glabrous. Capsule not seen. Fl. Oct–Dec.

• Shaded valleys; 200–400 m. Guangxi (Liujiang).

This species is used medicinally.

88. *Strobilanthes compacta* D. Fang & H. S. Lo, Guihaia 17: 31. 1997.

密苞马蓝 mi bao ma lan

Subshrubs to 2 m tall, slightly anisophyllous. Stems 4-angled, glabrous. Petiole 1–3 cm, sulcate, glabrous; leaf blade elliptic to ovate-elliptic, 8.5–15 × 3.5–7 cm, both surfaces glabrous and densely covered with cystoliths, adaxially blackish when dry, secondary veins 8 or 9 on each side of midvein and prominent, base cuneate to attenuate, margin serrate, apex acuminate. Inflorescences axillary, simple spikes, 1.5–8(–10) × ca. 1.2 cm, very dense; basal sterile bracts ovate-oblong, 3–4 × ca. 1 cm, leathery, abruptly narrowed at middle with a long caudate apex; floral bracts ovate, 2–3 × 0.4–0.6 cm, leathery, persistent, abaxially glabrous, margin minutely ciliate or glabrous, apex

long acuminate; bracteoles ovate, ca. 1×0.5 cm, glabrous, densely covered with cystoliths, margin minutely ciliolate, apex acuminate. Flowers imbricate on rachis. Calyx 5-lobed almost to base; lobes broadly lanceolate, $12\text{--}15 \times 3\text{--}4$ mm, subequal, basally overlapping, margin minutely ciliolate but otherwise glabrous, apex acuminate. Corolla purple, $3.5\text{--}4.8$ cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then slightly ventricose and gradually widened to ca. 1.5 cm at mouth; lobes ovate, ca. 5 mm, apex rounded. Stamens 4, included; filaments pubescent, shorter pair ca. 2.5 mm, longer pair ca. 6 mm; anther thecae oblong, ca. 3×1 mm, glabrous. Ovary sparsely hirsute at tip; style ca. 2.5 cm, slightly hirsute at base and glabrous apically. Capsule fusiform, ca. 1.5 cm, somewhat hirsute on apical part, 4-seeded. Seeds ovate in outline, ca. 3×2 mm, densely appressed hairy. Fl. Aug–Sep.

- Forests on limestone hills; 200–300 m. Guangdong, Guangxi.

89. *Strobilanthes heteroclita* D. Fang & H. S. Lo, Guihaia 17: 32. 1997.

异序马蓝 yi xu ma lan

Herbs or subshrubs, to 1.5 m tall, gregarious, isophyllous. Stems \pm 4-angled, sulcate, glabrous. Petiole to 5 cm; leaf blade broadly ovate, elliptic, broadly elliptic, or suborbicular, $5.5\text{--}19 \times 2.5\text{--}10$ cm, glabrous, both surfaces densely covered with linear cystoliths, secondary veins 7–10 on each side of midvein and prominent, base rounded to broadly cuneate, margin serrate, apex shortly caudate. Inflorescences axillary from apical axils, spikes, 1.5–5 cm, compact, 1–3 per axil; peduncle 0–1.3 cm; bracts broadly lanceolate, $11\text{--}12 \times 3\text{--}4$ mm, leathery, persistent, rust-colored scurfy pubescent, abaxially with black sessile glands, glabrescent, apex acuminate; bracteoles lanceolate, 8–9 mm, leathery, rust-colored tomentose, apex acuminate. Calyx 1.2–1.4 cm, 5-lobed almost to base; lobes narrowly lanceolate, with 2 lobes slightly longer than others, apex acuminate. Corolla purple to light blue, $3.5\text{--}4$ cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1 cm then ventricose and gradually widened to ca. 1.2 cm at mouth; lobes ovate, $5\text{--}6 \times 5\text{--}6$ mm, apex obtuse. Stamens 4, included; filaments pilose, shorter pair ca. 2 mm, longer pair ca. 7 mm; anther thecae oblong, 2–2.5 mm. Ovary sparsely hirsute at tip; style ca. 1.7 cm; stigma hirsute. Capsule fusiform, 1.5–2 cm, pilose at tip, 4-seeded. Seeds ovate in outline, ca. 3×3 mm, appressed pubescent. Fl. Jul–Sep, fr. Nov.

- Forests on limestone hills; 100–500 m. Guangxi (Long'an).

90. *Strobilanthes mucronatopuncta* Lindau, Bull. Herb. Boissier 5: 650. 1897.

尾苞马蓝 wei bao ma lan

Shrubs to 1.5 m tall, weakly anisophyllous, drying blackish. Stems \pm 4-angled, glabrescent. Petiole 0.5–3 cm, scurfy pubescent; leaf blade ovate, elliptic, or oblong-elliptic, $8.5\text{--}15 \times 3.5\text{--}7$ cm, abaxially puberulent along veins, adaxially glabrous, both surfaces densely covered with cystoliths, secondary veins 8 or 9 on each side of midvein, base cuneate to attenuate, margin dentate, serrulate, or subentire, apex acuminate. In-

florescences terminal and from apical leaf axils, simple spikes, 4–9 cm, solitary; peduncle 0.3–1 cm, rust-colored pubescent; bracts lanceolate, ca. 2.4×0.6 cm, persistent, rust-colored pilose, apex acuminate; bracteoles lanceolate, ca. 5×4 mm, rust-colored pilose, apex long acuminate and aristate. Flowers imbricate on rachis. Calyx 1.7–1.8 cm, 5-lobed almost to base; lobes lanceolate, $16\text{--}17 \times$ ca. 2 mm, subequal, rust-colored pilose, apex acuminate. Corolla purple, $3.5\text{--}4$ cm, slightly curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1 mm then gradually widened to ca. 1.3 cm at mouth; lobes ovate, ca. 7×7 mm, apex obtuse. Stamens 4, included; filaments sparsely pubescent, shorter pair ca. 2 mm, longer pair ca. 4 mm; anther thecae oblong, ca. 2×1.3 mm; pollen type 3. Ovary pilose; style ca. 2.7 cm; stigma ca. 3 mm, pubescent. Capsule fusiform, 2–2.2 cm, pilose, 4-seeded. Seeds ovate in outline, ca. 4×3.5 mm, appressed pubescent. Fl. Sep–Oct, fr. Dec.

Forests on mountain slopes; 400–700 m. Guangxi, Yunnan [Vietnam].

91. *Strobilanthes fimbriata* Nees in Wallich, Pl. Asiat. Rar. 3: 85. 1832.

流苏马蓝 liu su ma lan

Endopogon macrostegius Nees; *Strobilanthes fimbriata* var. *majuscula* W. W. Smith; *S. macrostegia* (Nees) C. B. Clarke; *S. neesii* Kurz.

Shrubs 0.6–1.5 m tall, drying blackish green. Branches terete, apically thinly brown pubescent, glabrescent. Petiole 0.5–2.5 cm; leaf blade oblong-elliptic to elliptic, to 18×7 cm, both surfaces with cystoliths, abaxially glabrous except for brown scurfy pubescence along veins, adaxially glabrous, secondary veins 8–12 on each side of midvein, base cuneate, margin subentire, apex acuminate. Inflorescences axillary, spikes, 3–6 cm, with 6–8 flower pairs; peduncle 0–0.3 cm, glabrous; bracts obovate, ca. 13×5 mm, both surfaces densely covered with cystoliths, apical margin ciliate with rigid brown trichomes, apex abruptly narrowed to a mucro; bracteoles oblanceolate, ca. 1×3 mm, abaxially apically fulvous pubescent, margin with a distinct shoulder, apex cuspidate. Flowers imbricate on rachis. Calyx 1–1.3 cm at anthesis, accrescent to ca. 2 cm; lobes linear-lanceolate, to 18×1 mm, apex long acuminate. Corolla violet, ca. 4.5 cm, outside and inside glabrous except for trichomes retaining style; tube basally cylindrical for ca. 8 mm then abruptly widened to 1.5–1.8 cm at mouth; lobes broadly ovate, ca. 6×7 mm, apex rounded. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 7 mm, pilose; anther thecae oblong, ca. 3×1.5 mm, erect; pollen type 3. Ovary glabrous except for densely comose tip; style ca. 4 cm, pilose. Capsule oblong, 1–2 cm, comose, 4-seeded. Seeds ovate in outline, ca. 4×3 mm, densely appressed pilose. Fl. May.

Moist places in forests; ca. 1000 m. Xizang (Médog) [Bangladesh, India, Myanmar].

92. *Strobilanthes brunnescens* Benoist, Bull. Mus. Natl. Hist. Nat. 27: 544. 1921.

折苞马蓝 zhe bao ma lan

Perilepta refracta (D. Fang, Y. G. Wei & J. Murata) C. Y. Wu & C. C. Hu; *Strobilanthes refracta* D. Fang, Y. G. Wei & J. Murata.

Subshrubs 1–2 m tall, anisophyllous, drying blackish. Stems 4-angled, sulcate, brownish puberulent. Petiole 0.2–2.5 cm, brownish puberulent; leaf blade ovate to rarely obovate-elliptic, (2–)4.5–21 × (1–)2.5–9.5 cm, both surfaces densely covered with cystoliths, abaxially puberulent along veins, adaxially glabrous, secondary veins 4–12 on each side of midvein, base cuneate, margin subentire to crenulate, apex shortly acuminate. Inflorescences axillary, spikes, 1.5–3 cm; bracts oblong-obovate with a broad base, ca. 11 × 4–5 mm, concave, rigid, abaxially pubescent and with marginal cilia of rigid brown trichomes, apex acute and becoming reflexed; bracteoles linear, 10–12 × ca. 1 mm, apically brownish pubescent, apex often reflexed. Flowers imbricate on rachis. Calyx 1.2–1.5 cm, subequally 5-lobed; lobes lanceolate, ca. 10 × 1 mm, pubescent with rigid trichomes, apex acuminate. Corolla purple, ca. 4 cm, slightly curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for ca. 1 cm then gradually widened to ca. 2 cm at mouth; lobes ovate, ca. 5 mm, apex emarginate. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair ca. 7 mm, pilose; anther thecae oblong, 3–3.5 mm. Ovary hirsute at tip; style ca. 2.7 cm, pilose; stigma obconical. Capsule not seen. Fl. Dec.

Forests in valleys; 300–500 m. Guangxi, Yunnan [Vietnam].

93. *Strobilanthes nobilis* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 471. 1884.

沙坝马蓝 sha ba ma lan

Strobilanthes petelotii Benoist.

Herbs 50–100 cm tall, perennial, isophyllous, drying blackish. Stems ± 4-angled, sulcate, reddish brown pubescent, apically with distinctive scattered wartlike excrescences. Petiole 1–1.5 cm or leaves sessile; leaf blade ovate-lanceolate to oblong-elliptic, sometimes pandurate, 7–17(–25) × 3.5–8 cm, glabrous or thinly pilose especially on abaxial veins, margin, and adaxial surface, abaxially paler, adaxially with cystoliths, secondary veins 6 or 7 on each side of midvein and somewhat parallel, base cuneate to rounded and auriculate, margin crenate, apex shortly acuminate. Inflorescences axillary or terminal, simple or basally branched spikes, 5–20 cm, often forming a panicle when mature; rachis reddish brown puberulent, apically becoming very slender; bracts lanceolate, 1.5–2 × 0.2–0.4 cm, persistent, glabrous except for ciliolate margin, occasionally developing stipitate glands when mature, 1-veined, apex long acuminate; bracteoles similar to bracts but narrowly linear-lanceolate, ca. 18 × 1 mm. Flowers 1–1.5 cm apart on rachis and apically not very confluent. Calyx 1–2.2 cm, accrescent in fruit, 5-lobed almost to base; lobes linear, 14–20 × ca. 1 mm, equal, occasionally developing stipitate glands when mature, margin ciliolate, apex finely acuminate. Corolla blue, ca. 3 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2.5 mm wide for ca. 7 mm then strongly bent and abruptly widened to 1–1.4 cm at mouth; lobes ovate, ca. 4 × 4 mm, apex emarginate. Stamens 4, included; shorter filament pair 2–3 mm, glabrous; longer filament pair ca.

7 mm, basally pilose; anther thecae oblong, ca. 3 × 1.2 mm; pollen type 3. Ovary glabrous, with 2 ovules per locule; style ca. 2.5 cm, pilose. Capsule 1.2–2.2 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3 × 2.5 mm, densely appressed pubescent; areola small. Fl. Sep–Nov, fr. Mar.

Streamsides, forests; 1100–1800 m. Yunnan [India, Myanmar, Vietnam].

94. *Strobilanthes polyneuros* C. B. Clarke ex W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 198. 1918.

多脉马蓝 duo mai ma lan

Shrubs to 2 m tall, isophyllous. Stems 4-angled, sulcate, glabrous. Petiole 1–5 cm, sulcate, subglabrous; leaf blade elliptic to broadly lanceolate, 13–30 × 5–11 cm, glabrous, abaxially paler, adaxially with numerous cystoliths, secondary veins 12–20 on each side of midvein and parallel, base cuneate, margin serrate, apex acuminate. Inflorescences axillary, spikes, 2–8 cm, composed of 1–5 simple dense spikes arising at apex of peduncle forming a dense cluster of spikes; peduncle ca. 1 cm, puberulent and sometimes with warty excrescences; sterile bracts ovate at base of spike, ca. 1 × 0.5 cm; floral bracts lanceolate, 1.5–3 × 0.3–0.4 cm, abaxially minutely puberulent, apex finely acuminate and slightly incurved; bracteoles linear-lanceolate, ca. 2 cm, minutely puberulent, apex acuminate. Flowers imbricate on rachis. Calyx 1.7–2.3 cm, somewhat accrescent and sometimes becoming gland-tipped pilose at maturity, 5-lobed almost to base; lobes linear-lanceolate, thinly puberulent, apex finely acuminate. Corolla purple, 3.5–4 cm, straight, outside sparsely pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 1.4 cm then gradually widened to ca. 1.4 cm at mouth; lobes orbicular, ca. 6 mm in diam. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 5 mm; anther thecae oblong, ca. 3.5 × 1 mm; pollen type 3. Ovary sparsely gland-tipped pilose at tip; style ca. 3.5 cm, pilose. Capsule ca. 20 × 3 mm, glabrous or with a very few apical trichomes, 4-seeded. Seeds ovate in outline, 3–5 × 2–4 mm, densely appressed pubescent. Fl. Oct–Jan, fr. Mar.

Forests; 200–1600 m. Yunnan [Myanmar, Thailand, Vietnam].

95. *Strobilanthes bipartita* Terao ex J. R. I. Wood, Kew Bull. 58: 122. 2003.

双萼马蓝 shuang e ma lan

Subshrubs 50–100 cm tall, isophyllous. Stems terete, glabrous. Petiole 0.7–1.5 cm, sparsely brown pilose; leaf blade elliptic, 6–22 × 3.5–10 cm, hirsute especially along veins, abaxially cystoliths prominent, secondary veins 12–16 on each side of midvein, base cuneate, margin remotely serrate, apex acute. Inflorescences axillary or terminal, abbreviated to headlike spikes, ca. 2 cm; peduncle 2–4 mm, brown pubescent; bracts ovate, 3–3.5 × 1.2–1.7 cm, glabrous except for ciliate margin, margin entire or apically serrate, apex acute; bracteoles oblong-lanceolate, ca. 15 × 3 mm, glabrous. Calyx with appressed silky trichomes on both surfaces, 2-lipped; lower lip ca. 1.2 cm, 2-lobed, lobes triangular and ca. 1.5 × 1.5 mm; upper lip ca. 1.3 cm, 3-dentate to ca. 1 mm. Corolla purplish blue, ca. 4 cm, ventricose, outside glabrous, inside glabrous except for trichomes

retaining style; tube basally cylindric and ca. 2 mm wide for ca. 1.2 cm then gradually widened to ca. 1.4 cm at mouth; lobes ovate, ca. 5×7 mm, apex obtuse. Stamens 4, included; shorter filament pair ca. 2 mm, glabrous; longer filament pair ca. 4.5 mm, sparsely pilose; anther thecae oblong, ca. 3×1 mm. Ovary glabrous; style ca. 3.2 cm, pilose. Capsule not seen. Fl. Dec.

Thickets on limestone hills; 300–900 m. Yunnan (Jinghong) [Laos].

96. *Strobilanthes retusa* D. Fang, Acta Phytotax. Sin. 38: 187. 2000.

凹苞马蓝 ao bao ma lan

Perilepta retusa (D. Fang) C. Y. Wu & C. C. Hu.

Herbs to 80 cm tall, branched, anisophyllous. Stems black when dry, 4-angled, glabrous, winged between nodes, wing 0.5–2 mm wide. Leaves sessile; leaf blade elliptic, rhombic-elliptic, obovate, or ovate, $6.5\text{--}20.5 \times 4\text{--}8.5$ cm, abaxially glabrous except sparsely pilose along veins, adaxially pubescent and densely covered with cystoliths, secondary veins 5–9 on each side of midvein and prominent on both surfaces, basally attenuate to rarely broadly cuneate, base auriculate, amplexicaul, and decurrent onto petiole, margin crenate, apex acute to acuminate. Inflorescences axillary or terminal, subcapitate, $2.5\text{--}3.5 \times 2\text{--}2.5$ cm, elongating after flowering; peduncle 1–4 cm; bracts ovate, ca. 2.2×1.5 cm, abaxially puberulent, base cordate, margin deeply crenate, apex acute; bracteoles elliptic, $1.4\text{--}1.6 \times$ ca. 0.7 cm, margin undulate, apex obtuse to emarginate. Calyx ca. 1.2 cm, accrescent to ca. 1.8 cm in fruit, subequally 5-lobed; lobes oblanceolate, puberulent, lower 2 ca. 9.5 mm and connate at base, upper 3 ca. 1.2 cm and extremely shortly connate. Corolla white with purplish stripes on upper lobes, ca. 4 cm, slightly curved, outside glabrous; tube basally cylindric and narrow for ca. 1 cm then gradually widened to ca. 2 cm at mouth; lobes oblong, ca. 5×5 mm, apex subrounded. Stamens 4, included; filaments pilose, shorter pair ca. 2.5 mm and basally sparsely pilose, longer pair ca. 5 mm; anther thecae oblong, 3–4 mm. Ovary glabrous; style ca. 2.5 cm, pubescent; stigma unequally 2-lobed. Capsule ellipsoid, ca. 1.8 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 2.5×2.5 mm, densely appressed pilose. Fl. Jul.

• Moist places by streams; 500–600 m. Guangxi (Huanjiang).

97. *Strobilanthes cruciata* (Bremekamp) Terao, Acta Phytotax. Geobot. 31: 59. 1980.

四苞马蓝 si bao ma lan

Tetragoga cruciata Bremekamp, Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 41(1): 300. 1944; *T. nagensis* Bremekamp.

Subshrubs 1–2 m tall, anisophyllous. Stems 4-angled, sulcate, rust-colored hirsute or glabrous. Petiole 1–1.5 cm, pubescent; leaf blade ovate to ovate-lanceolate, $4\text{--}13 \times 1.5\text{--}5.5$ cm, smaller of pair ca. 1/3 size of larger one, abaxially pale white tomentose especially along midvein, adaxially sparsely tomentose and brownish green when dry, secondary veins 7–9 on each side of midvein, base cuneate, margin serrate and ciliate, apex

acuminate. Inflorescences axillary or terminal, subcapitate; peduncle 0–2.5 cm, gland-tipped pilose; outer bracts leaflike, petiolar base forming a rigid involucre around capitulum, $1\text{--}2 \times 0.5\text{--}1$ cm, outside densely brownish gland-tipped pilose to subglabrous, inside glabrous, apical laminar portion ovate, $2\text{--}4 \times 2\text{--}3$ cm, and erect; inner bracts linear-pandurate, $12\text{--}16 \times 3\text{--}5$ mm, abaxially pilose and apically gland-tipped pubescent, adaxially glabrous, margin entire, apex acute; bracteoles narrowly linear, ca. 13×1 mm. Calyx ca. 1.1 cm, outside pilose except glabrous toward base, inside apically silky villous, margin apically ciliate. Corolla white, ca. 2.5 cm, curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindric and ca. 3 mm wide for ca. 1 mm then ventricose and gradually widened to ca. 1.2 cm at mouth; lobes ovate, ca. 4×4 mm, apex obtuse. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair ca. 6 mm, hirsute; anther thecae oblong, ca. 3×1 mm, erect, apiculate; connective shortly excurrent; pollen type 1. Ovary oblong, glabrous; style ca. 2.2 cm, gland-tipped pilose. Capsule fusiform, ca. 1.5 cm, glabrous, 4-seeded. Seeds brown, ovate in outline, ca. 4×3 mm, densely appressed pubescent; areola small. Fl. Dec–Jul.

Dense moist mixed forests; 800–1500 m. Hainan, Xizang (Médog), Yunnan [India, Indonesia, Myanmar, Thailand].

Strobilanthes cruciata is a very distinct species with unique inflorescence structure and unusual pollen combined with the calyx sericeous inside.

98. *Strobilanthes simonsii* T. Anderson, J. Linn. Soc., Bot. 9: 474. 1867.

西蒙马蓝 xi meng ma lan

Subshrubs to 1 m tall, anisophyllous. Stems and branches 4-angled, sulcate, tomentose. Petiole 2–10 mm, sulcate, tomentose; leaf blade ovate-elliptic, smaller one $1.2\text{--}4 \times 0.6\text{--}1.4$ cm and larger one $3.5\text{--}18 \times 1.6\text{--}6.5$ cm, both surfaces tomentose, secondary veins 5–7 on each side of midvein, base cuneate and oblique, margin crenulate-serrate, apex acuminate and falcate. Inflorescences axillary, capitate, few flowered; peduncle 0.2–1 cm, pubescent; bracts variable in size and shape; outermost bracts leaflike, pandurate with a constricted middle and broad petiolar base, $3\text{--}4 \times$ ca. 0.5 cm; inner bracts lanceolate, $13\text{--}20 \times$ ca. 3 mm, abaxially tomentose, apex acute; bracteoles linear, ca. 2×0.3 cm, abaxially apically pubescent. Calyx ca. 1.4 cm, subequally 5-lobed almost to base; lobes linear, outside apically pilose, apex acute. Corolla white, ca. 4 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindric and ca. 2.5 mm wide for ca. 8 mm then gradually widened to ca. 1.8 cm at mouth; lobes oblong, ca. 6×5 mm, apex rounded. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair ca. 1 cm, hirsute; anther thecae oblong, ca. 2×1 mm, base divaricate, apex apiculate; connective shortly excurrent. Ovary glabrous; style ca. 3.2 cm, hirsute. Capsule clavate, 1.8–2 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3×2 mm, densely pubescent. Fl. Mar–Aug.

Forests; 1300–1700 m. Xizang (Médog) [Bhutan, India].

99. *Strobilanthes echinata* Nees in Wallich, Pl. Asiat. Rar. 3: 85. 1832.

长苞马蓝 chang bao ma lan

Goldfussia echinata (Nees) N. P. Balakrishnan; *Strobilanthes jugorum* Benoist; *Tetraglochidium jugorum* (Benoist) Bremekamp.

Herbs to 2 m tall, anisophyllous. Stems subterete to 4-angled, sulcate, pubescent with brownish trichomes or glabrescent. Leaves petiolate but apicalmost ones sessile; petiole 0.5–4 cm, flat, slightly winged, pubescent or glabrous; leaf blade ovate, elliptic, or ovate-lanceolate, 4–20 × 1.5–7.5 cm, smaller of pair ca. 1/2 size of larger one, both surfaces pilose to subglabrous and with cystoliths, abaxially pale green, adaxially green, secondary veins 7–11 on each side of midvein, base cuneate and decurrent onto petiole, margin crenate-serrate, apex acuminate. Inflorescences capitate, 4–8-flowered, enveloped by bracts; peduncle short, usually simple; outer sterile bracts sessile, ovate, ovate-oblong, or oblong-ovate, 3–5 × 2–2.5 cm, equal or unequal, persistent, margin dentate, apex obtuse, rounded, or fimbriate; inner bracts fertile, obovate to spatulate, 2–3 × 0.7–0.8 cm, margin ciliate; bracteoles linear to oblanceolate, 13–23 × 1.5–3 mm, pubescent or glabrous, margin entire or sometimes dentate or fimbriate toward apex, apex acuminate. Calyx 1.5–2 cm, pubescent, 5-lobed almost to base; lobes linear, 12–19 × 1–2 mm, subequal, outside apically pubescent. Corolla violet, 4.5–5.5 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1.5 mm then ventricose and widened to ca. 1.5 cm at mouth; lobes ovate, 8–9 × 8–10 mm, apex rounded. Fertile stamens 4, included; shorter filament pair 3–5 mm, glabrous; longer filament pair 5–7 mm, pilose; anther thecae oblong, 2–3 × ca. 2 mm, apex apiculate; connective excurrent; staminode occasionally present, small or inconspicuous; pollen type 3. Ovary glabrous; style ca. 2.5 cm, hirsute. Capsule fusiform, 1.2–1.8 cm, glabrous, 4-seeded. Seeds brown, ovate in outline, 3–5 × 2.5–4 mm, pilose; areola small. Fl. May–Sep.

Moist forests; 100–2200 m. Guangdong, Guangxi, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam].

Strobilanthes echinata has been misidentified in the recent literature as *Tetraglochidium gigantodes* (Lindau) C. Y. Wu & C. C. Hu (*Strobilanthes gigantodes* Lindau) by D. Fang et al. (Guihaia 17: 38. 1997), C. C. Hu (FRPS 70: 157. 2002), and C. C. Hu and X. P. Fu (Higher Pl. China 10: 373. 2004).

100. *Strobilanthes cuneata* (Shakya) J. R. I. Wood, Edinburgh J. Bot. 51: 218. 1994.

楔叶马蓝 xie ye ma lan

Dossifluga cuneata Shakya, J. Jap. Bot. 50: 99. 1975.

Herbs to 30 cm tall, isophyllous. Stems 4-angled, glabrous. Petiole ca. 5 mm; leaf blade obovate to broadly elliptic, 4.5–7 × 2–3.5 cm, abaxially sparsely pilose along veins, adaxially glabrous and densely covered with cystoliths, secondary veins 6 or 7 on each side of midvein, base narrowly cuneate, margin serrate and ciliate, apex acuminate. Inflorescences axillary, subsessile clusters; bracts leaflike, obovate, 6–12 × 6–8 mm, cystoliths

prominent, margin dentate; bracteoles linear-oblanceolate, 2–4 mm. Calyx 1.2–1.5 cm, 5-lobed almost to base; lobes linear-lanceolate, 1–1.5 mm wide, subequal, margin ciliate. Corolla blue, campanulate, 3–4 cm, outside glabrous except for cilia along veins, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1.2 cm then gradually widened to ca. 1.4 cm at mouth; lobes orbicular, ca. 8 mm in diam. Stamens 4, included; filaments glabrous; shorter filament pair ca. 3 mm, equal, incurved; longer filament pair ca. 8 mm, unequal, incurved; anther thecae spherical, ca. 1.2 mm in diam., nodding; pollen type 3. Ovary glabrous; style 2.8–3.2 cm. Capsule obovoid, ca. 10 × 3 mm, glabrous, 4-seeded. Seeds suborbicular in outline, ca. 1.5 mm, long pilose; areole large. Fl. Aug.

Forests; ca. 2500 m. Xizang (Nyalam) [Nepal].

101. *Strobilanthes glomerata* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867.

球序马蓝 qiu xu ma lan

Goldfussia glomerata Nees in Wallich, Pl. Asiat. Rar. 3: 88. 1832.

Subshrubs to 1 m tall, strongly anisophyllous. Stems and branches 4-angled to subterete, setose. Petiole 0.6–3 cm, densely pubescent; leaf blade elliptic, broadly elliptic, or narrowly ovate, 5.5–19 × 2.7–10 cm, smaller of pair ca. 1/5 size of larger one, both surfaces densely pubescent with purplish trichomes, secondary veins 5–7 on each side of midvein, base oblique, rounded, and decurrent onto petiole, margin serrate with shallow widely spaced teeth and ciliate with red multicellular trichomes, apex acuminate. Inflorescences capitate; bracts variable in size and shape; outer bracts sterile, lanceolate, ca. 3 × 0.6 cm, densely pubescent with purplish trichomes, margin serrate; inner bracts lanceolate, ca. 1.6 × 0.4 cm, margin entire and ciliate, apex acuminate; bracteoles lanceolate, 8–12 × ca. 2 mm, pubescent. Calyx ca. 1.5 cm, 5-lobed almost to base; lobes 10–13 × ca. 1.5 mm, slightly unequal, outside pubescent with purplish trichomes especially apically, inside glabrous. Corolla purple, 4–6 cm, subventricose, outside pubescent with gland-tipped trichomes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for 0.6–1.6 cm then bent to ca. 90° and gradually widened to ca. 1.7 cm at mouth; lobes ovate, ca. 4 × 7 mm, apex retuse. Stamens 4, included; filaments glabrous, shorter pair ca. 1.5 mm, longer pair 7–9 mm and unequal; anther thecae obliquely ellipsoid, ca. 1.5 mm; pollen type 3. Ovary glabrous; style ca. 3 cm, glabrous. Capsule fusiform, ca. 12 × 3 mm, glabrous, 4-seeded. Seeds ovate in outline, ca. 2 × 2 mm, densely pubescent; areola small. Fl. Aug–Oct.

Forests; 1000–1500 m. Xizang (Cona) [India].

Strobilanthes glomerata is introduced in Indonesia.

102. *Strobilanthes capitata* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 475. 1867.

头花马蓝 tou hua ma lan

Goldfussia capitata Nees in Wallich, Pl. Asiat. Rar. 3: 88. 1832.

Subshrubs or perennial herbs, to 1 m tall, much branched, anisophyllous. Stems decumbent to ascending, pilose, glabrescent. Petiole 1–3 cm; leaf blade lanceolate, elliptic-ovate, or elliptic, 4–14 × 1.5–9 cm, abaxially pubescent along veins but often glabrescent, adaxially sparsely pilose and with numerous cystoliths, secondary veins 6 or 7 on each side of midvein, base attenuate and oblique, margin serrate, apex acuminate. Inflorescences axillary, pedunculate heads, ovoid to ellipsoid, 1.5–2 × 1–3 cm, 1–3 per axil, sometimes forming a panicle of heads with reduced leaves; peduncle 1–6 cm, glabrous or pubescent, simple or branched, sometimes with a sterile bract at branching point; outer floral bracts sterile, ovate, 1.5–2.3 cm, not overtopping capitula, concave, deciduous as flowers open, pubescent or glabrous, margin crenate, apex obtuse, acute, or acuminate; inner bracts oblong-elliptic, 1.3–1.6 cm, margin entire or with 1 or 2 teeth; bracteoles oblong-elliptic, 7–11 mm, caducous, pilose. Calyx pale green, ca. 1.2 cm, accrescent to ca. 2 cm in fruit, 5-lobed almost to base; lobes linear-oblancheolate, equal, outside pubescent, margin ciliate. Corolla blue, 4.3–5.5 cm, straight, outside thinly pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for ca. 1.5 cm then gradually widened to ca. 1.5 cm at mouth; lobes oblong, ca. 5 × 4 mm. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm and nodding, longer pair 7–8 mm and unequal; anther thecae spherical, ca. 1.2 mm in diam., incurved; pollen type 3. Ovary gland-tipped pilose; style ca. 3.5 cm, thinly pilose. Capsule oblong, 1.4–2 cm, apical half gland-tipped pilose, 4-seeded. Seeds ovate in outline, ca. 3 × 2.5 mm, pubescent; areola small. Fl. Sep–Feb.

Forests; 900–1700 m. Xizang (Mainling, Nyalam) [Bhutan, India, Myanmar, Nepal].

103. *Strobilanthes speciosa* Blume, Bijdr. 799. 1826.

美丽马蓝 mei li ma lan

Baphicacanthus multibractealatus Hung T. Chang & H. Zhu; *Goldfussia speciosa* (Blume) Bremekamp.

Subshrubs or herbs, to 1.2 m tall, perennial, anisophyllous. Stems ascending, apically pubescent. Petiole 0.5–2 cm, hirsute; leaf blade of smaller pair ovate to suborbicular and ca. 3 × 1.6 cm and of larger pair ovate and 12.5–16.5 × 6–8 cm, both surfaces hirsute, adaxially with numerous prominent linear cystoliths, secondary veins 7–9 on each side of midvein, base oblique and decurrent onto petiole, margin irregularly crenate-dentate, apex acute to caudate. Inflorescences axillary, heads, narrowly ovoid, 1–2.5 × 1–1.5 cm, borne on simple or 3-furcate branches; peduncle 1–3 cm, simple or branched and sometimes with a sterile bract at branching point, hirsute; sterile bracts resembling small leaves; floral bracts lanceolate, 1.2–2.3 × 0.7–1 cm, overtopping capitula, abaxially brownish pubescent with gland-tipped trichomes, margin entire and ciliate, apex acuminate and falcate; bracteoles oblanceolate, 7–13 × ca. 2 mm, abaxially pilose, margin ciliate. Calyx outside hirsute, 5-lobed almost to base; lobes oblanceolate, 7–15 × ca. 0.2 mm, subequal, margin ciliate, apex acute. Corolla purplish blue, 3.5–5 cm, ventricose, outside gland-tipped pilose, inside glabrous; tube basally cylindrical and ca. 2.5 mm wide for ca. 1 cm then gradually widened to ca. 1.5 cm at mouth; lobes ca. 5 × 4 mm,

apex rounded. Stamens 4, included; filaments glabrous, shorter pair 1–2 mm and nodding, longer pair 4–6 mm; anther thecae spherical, ca. 1.2 mm in diam., incurved; pollen type 3. Ovary comose; style ca. 3.7 cm; stigma unequally 2-lobed. Capsule fusiform, 1.5–1.8 × ca. 0.4 cm, apically with a few gland-tipped trichomes, 4-seeded. Seeds brown, ovate in outline, ca. 3 × 2.5 mm, appressed pilose. Fl. Sep–Dec, fr. Jan.

Forests; 500–1800 m. Yunnan [Cambodia, Indonesia, Laos, Malaysia, Thailand, Vietnam].

This species intergrades with *Strobilanthes capitata*, from which it differs in little more than the narrower heads overtopped by the floral bracts and may not be distinct.

Strobilanthes speciosa has been misidentified as *Goldfussia glomerata* Nees by C. C. Hu (FRPS 70: 164. 2002).

104. *Strobilanthes kingdonii* J. R. I. Wood, Edinburgh J. Bot. 51: 244. 1994.

合页草 he ye cao

Subshrubs 0.5–3 m tall, branched, slightly anisophyllous. Stems 4-angled, bifariously pilose, apically glabrescent. Petiole 0.5–2 cm, pubescent; leaf blade ovate, 5–12 × 1.5–5 cm, both surfaces pubescent, abaxially slightly paler, secondary veins 5–8 on each side of midvein, base long attenuate, margin crenate to serrate, apex acute to acuminate and slightly falcate. Inflorescences axillary, dense headlike spikes, borne on a short usually simple or (2 or)3-furcate peduncle; peduncle 1–3 cm, pilose; rachis sparsely pilose; outer sterile bracts leaflike, lanceolate to narrowly oblong-elliptic, 1.3–2.7 × 0.3–0.8 cm, pubescent, margin dentate; floral bracts ovate, ovate-elliptic, or subrhomboidal, 7–10 × 2–4 mm, persistent, abaxially ciliate with long non-glandular white trichomes and scattered shorter white trichomes, apex obtuse; bracteoles linear-oblancheolate, 4–8 × 1.5–2 mm, persistent, margin ciliate with long white trichomes and sometimes stalked glands at apex, apex obtuse to acute. Calyx outside densely pilose with scattered long white trichomes mixed with numerous gland-tipped trichomes, inside glabrous, subequally 5-lobed to base, not accrescent; lobes narrowly oblong to lanceolate, 7–9 × ca. 1.5 mm, apex acute. Corolla purple, blue, or rose, 3.5–4.2 cm, straight, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and 1.5–2 mm wide for ca. 8 mm then ventricose and widened to ca. 1.2 cm at mouth; lobes broadly ovate, ca. 7 × 6 mm, apex rounded. Stamens 4, included; shorter filament pair 1.5–3.5 mm, glabrous; longer filament pair 6–8 mm, pilose; anther thecae shortly ellipsoid, ca. 1.2 mm, incurved; pollen type 3. Ovary apically gland-tipped pilose; style 1.7–1.9 mm, sparsely pilose. Capsule oblong, ca. 1 cm, gland-tipped pilose, 4-seeded. Seeds ca. 3 × 1.8 mm, pubescent. Fl. Mar, Jul, Nov.

● Evergreen broad-leaved forests by streams; 1500–2800 m. Xizang (Médog, Zayü), Yunnan (Fugong).

Strobilanthes kingdonii was mistakenly treated as *Sympagis monadelpha* (Nees) Bremekamp by C. C. Hu (FRPS 70: 176. 2002) and C. C. Hu and X. P. Fu (Higher Pl. China 10: 378. 2004) and also as *Sympagis petiolaris* (Nees) Bremekamp by C. C. Hu (FRPS 70: 178. 2002).

105. *Strobilanthes lamiifolia* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 476. 1867.

蒙自马蓝 meng zi ma lan

Goldfussia lamiifolia Nees in Wallich, Pl. Asiat. Rar. 3: 88. 1832; *G. austinii* (C. B. Clarke ex W. W. Smith) Bremekamp; *G. feddei* (H. Léveillé) E. Hossain; *G. hancockii* (C. B. Clarke ex W. W. Smith) Bremekamp; *G. mahongensis* (H. Léveillé) E. Hossain; *G. rotundifolia* (D. Don) Bremekamp; *Ruellia rotundifolia* D. Don; *Strobilanthes austinii* C. B. Clarke ex W. W. Smith; *S. feddei* H. Léveillé; *S. hancockii* C. B. Clarke ex W. W. Smith; *S. mahongensis* H. Léveillé.

Herbs 30–60 cm tall, erect, much branched, isophyllous. Stems slender, decumbent and often rooting at nodes, bifariously pilose or glabrescent. Petiole 0–3 cm but apically leaves sessile, densely yellowish brown pilose; leaf blade elliptic, ovate, obovate, or ovate-lanceolate, 1–7(–11) × 1–4(–6) cm, abaxially glabrous or pilose, adaxially dark green and glabrous or sparsely pilose, secondary veins 4–7 on each side of midvein, base cuneate and often decurrent onto petiole, margin serrulate to crenulate, apex acute. Inflorescences terminal or axillary from apical leaf axils, spikes, 2–5 cm; peduncle 0–6 cm, pubescent; sterile bracts resembling reduced leaves; floral bracts imbricate, oblong to ovate-elliptic, 1.1–2.5 cm, concave, caducous or somewhat persistent after flowering, dull green, abaxially pubescent and covered with cystoliths, margin usually crenulate; bracteoles narrowly oblong-elliptic, 6–7 × 1–2 mm, scarious and caducous, abaxially puberulent. Calyx 0.8–1.4 cm, outside gland-tipped ciliate, 5-lobed almost to base; lobes linear-oblong with one distinctly longer than others, apex acute. Corolla purplish red to blue, 3.5–5 cm, ventricose, outside pubescent; tube basally cylindrical and ca. 2 mm wide for ca. 1.2 cm then slightly curved and gradually widened to ca. 1.2 cm at mouth; lobes orbicular, 5–6 mm in diam. Stamens 4, included; filaments subglabrous, shorter pair ca. 2 mm and strongly reflexed, longer pair ca. 7 mm; anther thecae subspherical, ca. 1.2 mm; pollen type 3. Ovary comose; style 3.2–3.5 cm. Capsule fusiform, ca. 1.2 cm, glabrous except for few trichomes at tip, 4-seeded. Seeds light brown, ovate in outline, ca. 2.5 × 2 mm, densely pubescent; areola small, glabrous. Fl. Aug–Nov.

Dry grasslands and open *Pinus* forests; 1000–2600 m. Guizhou, Sichuan, SE Xizang, Yunnan [Bhutan, India, Nepal].

Strobilanthes lamiifolia was misidentified as *S. oligocephala* by Q. H. Chen (Fl. Guizhou. 10: 257. 2004).

106. *Strobilanthes penstemonoides* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 477. 1867 [*“pentstemonoides”*].

圆苞马蓝 yuan bao ma lan

Goldfussia penstemonoides Nees in Wallich, Pl. Asiat. Rar. 3: 88. 1832 [*“pentstemonoides”*]; *G. flexuosa* Nees; *Ruellia capitata* Buchanan-Hamilton ex D. Don.

Herbs to 1 m tall, anisophyllous. Stems 4-angled, sulcate, subglabrous. Leaves subsessile; leaf blade elliptic to elliptic-lanceolate, 4–15 × 1–4 cm, abaxially glabrous but sometimes pubescent along veins, adaxially glabrous, secondary veins 5–7

on each side of midvein, base cuneate, margin serrulate, apex acute. Inflorescences terminal, abbreviated headlike spikes, simple or 3-furcately branched, sometimes with 1 or a few distant flowers; peduncle gland-tipped pilose; bracts orbicular, 6–9 mm in diam., unequal in size, soon scarious and caducous, glabrous; bracteoles absent. Calyx 0.5–1.2 cm, strongly accrescent in fruit, 5-lobed almost to base; lobes linear, unequal with one slightly longer than others, outside gland-tipped pilose. Corolla violet, ca. 3.5 cm, slightly curved, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm then gradually widened to ca. 1.2 cm at mouth; lobes ovate, ca. 4 × 4 mm. Stamens 4, included; filaments subglabrous, shorter pair ca. 4 mm and curved, longer pair 7–8 mm; anther thecae spherical, ca. 1.3 mm in diam., incurved; pollen type 3. Ovary pilose at tip; style ca. 2.8 cm, sparsely hirsute. Capsule clavate, ca. 1.2 cm, gland-tipped pubescent, 4-seeded. Seeds suborbicular in outline, ca. 2.5 mm in diam., pubescent. Fl. Aug–Nov, fr. Sep–Dec.

Mountain slopes; 2100–2300 m. SE Xizang, Yunnan [Bhutan, India, Nepal].

107. *Strobilanthes ningmingensis* D. Fang & H. S. Lo, Guihaia 17: 39. 1997.

宁明马蓝 ning ming ma lan

Goldfussia ningmingensis (D. Fang & H. S. Lo) C. Y. Wu ex C. C. Hu.

Herbs or subshrubs, to 40 cm tall, branched, anisophyllous. Stems 4-angled, sulcate, glabrous except for pubescent nodes. Petiole 3–7 cm; leaf blade ovate-elliptic, smaller of pair 1–1.7 × 0.7–1.2 cm and larger one 3–5.5 × 2–3 cm, both surfaces glabrous, abaxially cystoliths prominent, whitish, and dense along veins, adaxially with prominent linear cystoliths, secondary veins 4–6 on each side of midvein, base subrounded, margin serrulate, apex acute to acuminate. Inflorescences axillary or terminal, headlike simple spikes, 3- or 4-flowered; peduncle ca. 3 cm, apically thickened; bracts elliptic, 6–12 mm, caducous, abaxially densely covered with cystoliths, margin ciliate, apex acute; bracteoles linear, ca. 5 × 1 mm, caducous, abaxially sparsely hirsute. Calyx 5-lobed almost to base; lobes oblong-elliptic, 6–7 × ca. 1.5 mm, slightly unequal with one longer than others, outside glabrous, margin ciliate. Corolla purple, ca. 4 cm, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2.5 mm wide for ca. 1.2 cm then gradually widened to ca. 1.3 cm at mouth; lobes orbicular, ca. 6 mm in diam., apex emarginate. Stamens 4, included; filaments glabrous; shorter filament pair ca. 3 mm, equal, incurved; longer filament pair 6–8 mm, unequal, erect; anther thecae subspherical, ca. 1.3 mm in diam., nodding. Ovary sparsely gland-tipped pilose at tip; style ca. 3 cm, sparsely gland-tipped pilose at base. Capsule not seen. Fl. Dec.

● Limestone hills; 200–300 m. Guangxi (Ningming).

Known only from the type, *Strobilanthes ningmingensis* is very close to, and may be conspecific with, the very variable *S. dimorphotricha*, differing only in the non-glandular calyx, which may be only a development stage.

108. *Strobilanthes dimorphotricha* Hance, J. Bot. 21: 355. 1883.

球花马蓝 qiu hua ma lan

Herbs 40–150 cm tall, perennial, much branched, isophyllous or anisophyllous. Stems apically somewhat zigzag, glabrous or yellowish pubescent. Petiole 0.5–1.5 cm, sparsely pubescent or glabrous; leaf blade elliptic, elliptic-lanceolate, ovate, oblong, or oblong-elliptic, 1.5–15 × 0.5–4.5 cm, smaller of pair 1/3–2/3 size of larger one, adaxially dark green, white appressed pubescent, and with slightly prominent cystoliths, abaxially glabrous or whitish pubescent along veins and with or without multicellular trichomes, secondary veins 5–7 on each side of midvein and sometimes forming a net near margin, base cuneate to attenuate, margin serrulate, apex acuminate, caudate, or acute. Inflorescences axillary or terminal, headlike spikes, subspherical, very compact, 2- or 3-flowered, usually 1–3 spikes forming a forked panicle; peduncle ca. 2.5 cm, glabrous or pubescent; bracts ovate-elliptic, 1–1.3 cm, caducous, glabrous, apex acute to acuminate; bracteoles lanceolate, ca. 5 mm, caducous. Calyx 7–9 mm, accrescent to 1.5–1.7 cm, 5-lobed almost to base; lobes lanceolate, gland-tipped pubescent, one lobe slightly longer than others. Corolla violet, 3–4 cm, slightly curved, outside subglabrous to sparsely pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 5 mm then ventricose and gradually widened to ca. 1.5 cm at mouth; lobes orbicular, 5–6 mm in diam., subequal, apex emarginate. Stamens 4, included; filaments glabrous; shorter filament pair ca. 2 mm, equal, incurved; longer filament pair 5–7 mm, unequal, erect; anther thecae spherical, ca. 1 mm in diam.; pollen type 3. Ovary pilose; style ca. 3.5 cm, pilose. Capsule oblong-clavate, 1.4–1.8 cm, gland-tipped pubescent, 4-seeded. Seeds ca. 2.5 × 2.5 mm, lenticular, pubescent. Fl. Aug–Feb(–Apr).

Thickets on limestone hills, streamsides, thickets by streams; 200–2200 m. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Laos, Myanmar, Thailand, Vietnam].

Strobilanthes dimorphotricha has mistakenly been considered to be synonymous with *Goldfussia* (= *Strobilanthes*) *penstemonoides* by many authors.

- 1a. Leaf blade ovate, elliptic, or elliptic-lanceolate, pairs at each node quite unequal in size, apex acuminate to caudate 108a. subsp. *dimorphotricha*
- 1b. Leaf blade oblong to oblong-elliptic, pairs at each node equal to subequal in size, apex acute 108b. subsp. *rex*

108a. *Strobilanthes dimorphotricha* subsp. *dimorphotricha*

球花马蓝(原亚种) qiu hua ma lan (yuan ya zhong)

Goldfussia chaffanjonii (H. Léveillé) E. Hossain; *G. dimorphotricha* (Hance) Bremekamp; *G. equitans* (H. Léveillé) E. Hossain; *G. geniculata* (C. B. Clarke) Bremekamp; *G. psilostachys* (C. B. Clarke ex W. W. Smith) Bremekamp; *G. seguinii* (H. Léveillé) C. Y. Wu & C. C. Hu; *Strobilanthes burkili* Dunn;

S. chaffanjonii H. Léveillé; *S. equitans* H. Léveillé; *S. geniculata* C. B. Clarke; *S. geniculata* var. *integra* C. B. Clarke; *S. gracilis* T. Anderson (1867), not Beddome (1864); *S. laxicalyx* Hayata; *S. marchandii* H. Léveillé; *S. psilostachys* C. B. Clarke ex W. W. Smith; *S. seguinii* H. Léveillé.

Leaf blade ovate, elliptic, or elliptic-lanceolate, pairs at each node quite unequal in size, apex acuminate to caudate. Fl. Aug–Nov(–Apr).

Thickets on limestone hills, streamsides; 200–2200 m. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Vietnam].

108b. *Strobilanthes dimorphotricha* subsp. *rex* (C. B. Clarke) J. R. I. Wood, Kew Bull. 61: 19. 2006.

泰国马蓝 tai guo ma lan

Strobilanthes rex C. B. Clarke, Bot. Jahrb. Syst. 41: 68. 1907; *Goldfussia anfractuosa* (C. B. Clarke) Bremekamp; *G. rex* (C. B. Clarke) Bremekamp; *S. anfractuosa* C. B. Clarke; *S. penstemonoides* (Nees) T. Anderson var. *anfractuosa* (C. B. Clarke) Benoist; *S. penstemonoides* var. *rex* (C. B. Clarke) Benoist.

Leaf blade oblong to oblong-elliptic, pairs at each node equal to subequal in size, apex acute. Fl. Dec–Feb.

Thickets by streams; 600–1600 m. Yunnan [Laos, Myanmar, Thailand, Vietnam].

109. *Strobilanthes glandibracteata* D. Fang & H. S. Lo, Guihaia 17: 38. 1997.

腺苞马蓝 xian bao ma lan

Goldfussia glandibracteata (D. Fang & H. S. Lo) C. Y. Wu ex C. C. Hu.

Herbs to 50 cm tall, anisophyllous. Stems 4-angled, sulcate, bifariously pubescent. Petiole (0–)3–7 mm, sparsely pubescent; leaf blade ovate-elliptic to rarely narrowly ovate or lanceolate, smaller of pair 2–3.5 × 0.4–2.9 cm and larger one 5.5–12.5 × 2–4.5 cm, glabrous or sparsely pubescent along veins, cystoliths prominent, secondary veins 4–7 on each side of midvein, base attenuate, margin serrulate, apex caudate to acuminate. Inflorescences axillary, pedunculate heads; peduncle 0.6–3.5 cm, simple or 3-furcately branched, sulcate, bifariously pubescent, apically thickened; bracts elliptic to ovate-elliptic, 6–13 mm, caducous, multicellular gland-tipped pubescent, abaxially densely covered with cystoliths, apex acute; bracteoles lanceolate, ca. 5 × 1 mm. Calyx 5-lobed almost to base; lobes lanceolate to linear, 6–8 mm, unequal with one longer than others, outside multicellular gland-tipped pubescent. Corolla purple, ca. 3.5 cm, outside sparsely gland-tipped pilose but subglabrous at anthesis, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 8 mm then gradually widened to ca. 1.2 cm at mouth; lobes ovate, ca. 3 mm, apex emarginate. Stamens 4, included; filaments pilose; short filament pair ca. 2 mm, equal, incurved; longer filament pair 7–8 mm, unequal; anther thecae subspherical, ca. 1.3 mm in diam., nodding. Ovary brownish gland-tipped pilose; style ca. 2.8 cm, gland-tipped pilose. Capsule not seen. Fl. Oct.

- Limestone hills; 400–600 m. Guangxi (Lingyun).

Known only from the type, *Strobilanthes glandibracteata* is very close to and may be conspecific with the very variable *S. dimorphotricha*, differing only in the densely gland-tipped bracts.

110. *Strobilanthes formosana* S. Moore, J. Bot. 15: 294. 1877.

台湾马蓝 tai wan ma lan

Goldfussia formosana (S. Moore) C. F. Hsieh & T. C. Huang.

Herbs to 80 cm tall, perennial, branched, isophyllous. Stems stout, 4-angled, sulcate, hirsute, basally rooting at nodes. Petiole (0–)2–6 mm; leaf blade lanceolate-ovate to obovate, 3.5–14 × 1–5 cm, sparsely pubescent, secondary veins 5–9 on each side of midvein, base attenuate and decurrent onto petiole, margin serrate, apex acuminate. Inflorescences axillary, headlike spikes, compact, 1–3-flowered, sometimes several spikes forming a terminal panicle; peduncle 1–4 cm, pubescent; bracts variable in shape and size; outermost bracts linear-lanceolate; inner bracts imbricate, broadly ovate, 5–9 × 4–5 mm, concave, caducous but sometimes persistent after anthesis, margin ciliate, apex acuminate. Calyx ca. 1 cm, 5-lobed almost to base; lobes linear, unequal, sometimes slightly long hirsute. Corolla purplish blue, 3–3.5 cm, slightly bent, outside sparsely pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 3 mm wide for ca. 6 mm then slightly ventricose and gradually widened to ca. 1 cm at mouth; lobes oblong, ca. 5 × 6 mm, apex emarginate. Stamens 4, included; short filament pair ca. 2 mm, equal, incurved, glabrous; longer filament pair ca. 6 mm, unequal, erect, pilose; anther thecae spherical, ca. 1.2 mm in diam., incurved; pollen type 3. Capsule ellipsoid, ca. 2 cm, 4-seeded. Seeds ovate in outline, ca. 2 mm, densely appressed pubescent. Fl. Aug–Oct.

- Forests in ravines; 700–2300 m. Taiwan.

111. *Strobilanthes ovatibracteata* H. S. Lo & D. Fang, Guihaia 17: 40. 1997.

卵苞马蓝 luan bao ma lan

Goldfussia ovatibracteata (H. S. Lo & D. Fang) C. Y. Wu ex C. C. Hu.

Herbs or subshrubs, 0.5–2 m tall, branched, anisophyllous. Stems 4-angled to subterete, sulcate, retrorsely pubescent. Petiole 3–10 mm, grooved, pubescent; leaf blade ovate-elliptic to rarely ovate, smaller of pair 1–4 × 0.5–2 cm and larger one 3–10.5 × 1.5–4.5 cm, glabrous, cystoliths prominent, whitish, and dense along veins, secondary veins 3–6 on each side of midvein, base attenuate and oblique, margin serrulate, apex acute. Inflorescences axillary, pedunculate heads, 3- or 4-flowered, sometimes forming small axillary panicles; peduncle 1–3 cm, simple or 3-furcate, pubescent, apically thickened; bracts broadly ovate to rarely obovate, 4–13 mm, caducous, abaxially subglabrous and densely covered with cystoliths, margin ciliate, apex acute; bracteoles linear, ca. 5 × 2 mm. Calyx 5-lobed almost to base; lobes linear to lanceolate, 6–7 mm, slightly unequal with one longer than others, pilose. Corolla purple, 3.5–4.3 cm, ventricose, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2

mm wide for ca. 8 mm then gradually widened to ca. 1 cm at mouth; lobes ovate, ca. 4 mm, apex emarginate. Stamens 4, included; filaments glabrous; shorter filament pair ca. 2 mm, incurved; longer filament pair 7–8 mm, unequal, erect; anther thecae subspherical, ca. 1.3 mm in diam. Ovary gland-tipped pilose at tip; style 2.8–3.5 mm. Capsule 15–16 × 3–4 mm, oblong, apically gland-tipped pilose, 4-seeded. Seeds ovate in outline, ca. 2 × 2 mm, pubescent. Fl. Oct, fr. Dec.

- Forests; 300–900 m. Guangxi.

112. *Strobilanthes hupehensis* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 193. 1918.

湖北马蓝 hu bei ma lan

Herbs 40–60 cm tall, isophyllous. Stems erect, glabrous. Petiole ca. 1 cm, glabrous; leaf blade lanceolate to ovate-lanceolate, 9–14 × 2.5–4 cm, glabrous, secondary veins 5–8 on each side of midvein, base cuneate, margin serrate, apex acuminate. Inflorescences axillary, headlike spikes, compact, simple; peduncle 1–11 cm, very slender; bracts ovate, ca. 5 × 3 mm, caducous, apex acute; bracteoles absent. Calyx 5–8 mm, outside gland-tipped pilose, 5-lobed almost to base; lobes linear-oblong with one much longer than others, apex acute. Corolla purplish blue, 2.5–3.5 cm, straight, outside pilose, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then gradually widened to ca. 1 cm at mouth; lobes oblong, ca. 4 × 4 mm, apex obtuse. Stamens 4, included; filaments glabrous; shorter filament pair ca. 3 mm, equal, incurved; longer filament pair 6–7 mm, unequal, erect; anther thecae spherical, ca. 1.2 mm in diam., nodding; pollen type 3. Ovary sparsely pilose; style ca. 2.6 cm. Capsule oblong, ca. 1 cm, 4-seeded. Seeds ovate in outline, ca. 3 × 3 mm, pubescent. Fl. Jul–Oct.

- Forests; 200–1800 m. Hubei, Hunan.

The very slender peduncles combined with the isophyllous habit make *Strobilanthes hupehensis* very distinctive.

113. *Strobilanthes oxycalycina* J. R. I. Wood, Edinburgh J. Bot. 51: 250. 1994.

尖萼马蓝 jian e ma lan

Subshrubs 1–2.5 m tall, forming small bushes, isophyllous or slightly anisophyllous. Stems rounded, somewhat sulcate, glabrous, apically densely covered with whitish cystoliths. Petiole 0.5–1.7 cm, glabrous; leaf blade broadly elliptic to oblong-elliptic, 5–14 × 2–7 cm, both surfaces glabrous with prominent cystoliths, secondary veins 6–9 on each side of midvein, base cuneate, margin serrate, apex acuminate. Inflorescences terminal, abbreviate to headlike spikes, simple or 3-furcate branched, often with a few flowers some distant below head; peduncle 2–4 cm, glabrous; bracts ovate, ca. 7 × 3 mm, herbaceous, caducous, thinly pubescent, apex shortly acuminate; bracteoles oblong-obovate, ca. 3 × 1–2 mm, apex acute. Calyx ca. 9 mm, accrescent to ca. 1.1 cm in fruit, 5-lobed almost to base; lobes linear to narrowly oblong-elliptic, equal, outside pubescent with gland-tipped trichomes, inside glabrous, apex acute. Corolla blue, 3–4 cm, straight or slightly curved, outside gland-tipped pubescent, inside glabrous except for trichomes retaining style;

tube basally cylindric and ca. 1 mm wide for ca. 1 cm then gradually widened to ca. 9 mm at mouth; lobes ovate, ca. 5 × 5 mm, apex obtuse. Stamens 4; filaments finely pubescent, shorter pair ca. 4 mm, longer pair 7–8 mm, unequal, and slightly exerted; anther thecae spherical, ca. 1.3 mm in diam., incurved; pollen type 3. Ovary gland-tipped pilose at tip; style ca. 2.5 cm, pilose. Capsule oblong, 1.1–1.3 cm, gland-tipped pubescent on apical half especially near tip, 4-seeded. Seeds ovate in outline, ca. 3 × 3 mm, densely covered with appressed trichomes. Fl. Dec–Feb.

- Forests; 600–1000 m. Xizang (Médog).

114. *Strobilanthes discolor* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 477. 1867.

异色马蓝 yi se ma lan

Goldfussia discolor Nees in A. Candolle, Prodr. 11: 172. 1847; *Difflugossa nagaensis* Bremekamp; *Strobilanthes discolor* var. *nudicalyx* C. B. Clarke.

Subshrubs to 1.8 m tall, strongly anisophyllous. Stems and branches 4-angled to subterete, sulcate, glabrous, apically somewhat zigzag. Petiole 0.5–2.5 cm, sulcate, glabrous; leaf blade elliptic to ovate-elliptic, 3–14 × 2–6.5 cm, glabrous, both surfaces with prominent cystoliths, abaxially whitish, adaxially dark green, secondary veins 6–8 on each side of midvein, base attenuate, shortly decurrent onto petiole, and often slightly oblique, margin serrate, apex acuminate to caudate and often falcate. Inflorescences axillary, pedunculate heads, often with secondary branching and becoming paniculate; floral bracts oblanceolate to spatulate, 3–5 × 1–2 mm, rapidly caducous, glabrous; bracteoles oblanceolate but often apparently absent. Calyx 5-lobed almost to base; lobes at anthesis linear-oblong, 5–7 × ca. 1 mm, subequal, apically pilose but otherwise glabrous, apex obtuse; lobes in fruit subspatulate, accrescent to ca. 1 cm, often gland-tipped pilose. Corolla violet, 3.2–3.8 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindric and ca. 2 mm wide for 8–10 mm then gradually widened to ca. 1 cm at mouth; lobes ovate, 5–6 × 6–7 mm, apex rounded. Stamens 4; shorter filament pair 1.5–2 mm, strongly reflexed, glabrous; longer filament pair 7–8 mm, glabrous or with a few trichomes; anther thecae obliquely ellipsoid, ca. 1.2 mm, incurved; pollen type 3. Ovary glabrous; style 2.3–2.8 cm, hirsute. Capsule narrowly obovoid, ca. 10 × 2.5 mm, glabrous except for a few apical glands, 4-seeded. Seeds ovate in outline, ca. 3 × 2 mm, pilose. Fl. Nov–Feb. $2n = 22$.

Forests. Xizang (Cona) [India].

115. *Strobilanthes rhombifolia* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 461. 1884.

短柄马蓝 duan bing ma lan

Goldfussia sessilis Nees.

Herbs or subshrubs, strongly anisophyllous. Stems 4-angled, erect, glabrous. Petiole 0–10 mm but apical leaves sessile; leaf blade rhomboidal-elliptic, 2–15 × 1.5–10 cm, both surfaces green and with abundant cystoliths, secondary veins ca. 6 on each side of midvein, base cuneate and shortly decurrent onto petiole, margin serrate, apex acute. Inflorescences axillary, capi-

tula borne on simple or 2(or 3)-furcately branched peduncles, 2–10 cm; peduncle sulcate, bifariously pubescent with trichomes in sulci; sterile bracts leaflike, ovate, ca. 0.5 × 0.5 mm, relatively persistent; floral bracts obovate to oblong-obovate, ca. 6 × 1.5 mm, soon scarious and caducous; bracteoles not observed. Calyx subequally 5-lobed to base; lobes linear-elliptic, 7–12 × ca. 1.2 mm, pubescent and with sessile glands. Corolla blue, 4–4.5 cm, outside sparsely gland-tipped pilose but glabrescent, inside glabrous except for trichomes retaining style; tube basally cylindric and ca. 2 mm wide for ca. 1 cm then widened to 1.2–1.7 cm at mouth; lobes suborbicular, ca. 6 × 7 mm. Stamens 4, included; filaments glabrous, shorter pair ca. 2 mm, longer pair ca. 5 mm; anther thecae obliquely ovoid, ca. 1.5 × 1.2 mm, incurved. Ovary narrowly ovoid, apically gland-tipped; style ca. 2.7 cm, slender, glabrous apart from a few trichomes on basal part. Capsule not seen. Fl. Dec.

Forests. Xizang (Cona) [India].

116. *Strobilanthes multidentis* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 461. 1884.

分枝马蓝 fen zhi ma lan

Goldfussia multidentis (C. B. Clarke) Bremekamp; *Pteracanthus agrestis* (C. B. Clarke) Bremekamp; *Strobilanthes agrestis* C. B. Clarke; *S. agrestis* var. *hemiotis* C. B. Clarke; *S. penstemonoides* (Nees) T. Anderson var. *multidentis* (C. B. Clarke) Kuntze.

Subshrubs to 2 m tall, usually pubescent, strongly anisophyllous. Leaf blade ovate-elliptic, 2–20 × 1–9.5 cm, usually pubescent at least on veins, base attenuate and oblique, margin serrate, apex shortly acuminate and sometimes falcate. Inflorescences axillary, usually capitate, borne on 3-furcate axillary gland-tipped pilose peduncles, sometimes with scattered flower pairs below heads, rarely of branched spikes with flower pairs only; bracts ovate-suborbicular, 3–6 mm, concave, caducous, gland-tipped pilose, apex acute; bracteoles absent. Calyx 6–10 mm at anthesis, gland-tipped pubescent; lobes linear, accrescent to ca. 1.6 cm with one lobe 2–3 mm longer than others, apex acute. Corolla blue, 3.5–4.8 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindric and narrow then widened to ca. 1.5 cm at mouth. Stamens 4; shorter filament pair ca. 1 mm, recurved; longer filament pair 5–6 mm, slightly unequal, glabrous; anther thecae subspherical, ca. 1 mm, incurved; pollen type 3. Ovary gland-tipped; style ca. 2.5 cm, glabrous except for a few trichomes basally. Capsule oblong, 13–18 × ca. 3 mm, apically gland-tipped pilose, 4-seeded. Seeds ovate in outline, ca. 3 × 2 mm, appressed pubescent. Fl. Sep–Apr.

Streamsidings; 1500–2000 m. Xizang (Cona) [Bhutan, India, Nepal].

117. *Strobilanthes oligocephala* T. Anderson ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 461. 1884.

菱叶马蓝 ling ye ma lan

Difflugossa paupera (C. B. Clarke) Bremekamp; *Goldfussia oligocephala* (T. Anderson ex C. B. Clarke) Bremekamp; *G. thomsonii* Hooker; *Strobilanthes oligocephala* var. *treutleri* C. B. Clarke; *S. paupera* C. B. Clarke.

Subshrubs 30–50 cm tall, much branched, anisophyllous. Stems decumbent and basally rooting at nodes but eventually erect, pubescent to subglabrous. Petiole 0.5–4 cm but apical-most leaves sessile; leaf blade rhombic, elliptic, narrowly ovate, or apicalmost suborbicular, 4–12 × 1.5–6 cm, abaxially glaucous and glabrous or pilose along veins and margin, adaxially green, glabrous, and densely covered with prominent cystoliths, secondary veins 5–7 on each side of midvein, base attenuate and decurrent onto petiole, margin serrate, apex abruptly acuminate and falcate. Inflorescences terminal or arising from apical leaf axil, simple or branched, subcapitate with ca. 2 flower pairs to shortly spicate, 4–5 cm; peduncle 1–5 cm, glabrous or pubescent; bracts ovate to oblong, 0.8–1.5 × 0.7–1.3 cm, caducous, green when young but soon scarious, often becoming gland-tipped pilose, apex acute; bracteoles ca. 2 × 1 mm, caducous so often appearing absent. Calyx 1–1.8 cm, gland-tipped pilose, 5-lobed almost to base; lobes narrowly lanceolate with one slightly longer than others, apex acuminate. Corolla blue or white, 3.5–5 cm, ventricose, outside gland-tipped pubescent but sometimes only on lobes, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2.5 mm wide for 1–1.5 cm then bent and widened to ca. 1 cm at mouth; lobes oblong, ca. 6 × 5 mm, apex obtuse. Stamens 4, included; filaments sparsely hirsute, shorter pair ca. 4 mm, longer pair ca. 7 mm; anther thecae oblong-ovoid, ca. 2 × 1.2 mm. Ovary comose; style 2.8–3.2 cm. Capsule ca. 1.4 cm, apically gland-tipped pilose, 4-seeded. Seeds ovate in outline, ca. 3 × 2.5 mm, densely pubescent. Fl. Jul–Nov.

Thickets on limestone hills; 2600–2800 m. Xizang (Cona) [Bhutan, India, Nepal].

118. *Strobilanthes medogensis* (H. W. Li) J. R. I. Wood & Y. F. Deng, Bot. J. Linn. Soc. 150: 383. 2006.

墨脱马蓝 mo tuo ma lan

Goldfussia medogensis H. W. Li, Fl. Xizang. 4: 413. 1985.

Subshrubs 2–3 m tall, anisophyllous. Stems erect, slightly sulcate, bifariously puberulent. Petiole 0–5 mm with smaller leaves subsessile; leaf blade ovate, 3–13 × 2–5.5 cm, smaller of pair ca. 2/3 size of larger one, both surfaces glabrous, abaxially pale green, adaxially green and with numerous cystoliths, base rounded to subcordate, margin serrulate, apex acuminate and falcate. Inflorescences axillary, spikes, 3–6 cm, simple or 2-furcate; peduncle 2–5 cm; rachis bifariously pubescent; bracts obovate-oblong, 2.5–3 mm, herbaceous, caducous, glabrous; bracteoles similar to bracts but ca. 1.5 mm. Flowers 3–11 mm apart on rachis. Calyx ca. 1.2 cm in flower, 5-lobed to base; lobes narrowly oblong-elliptic, subequal, glabrous or gland-tipped pubescent, apex acuminate. Corolla yellowish white but dull purple on lobes, campanulate, ca. 2.5 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then gradually widened to 1–1.5 cm at mouth; lobes broadly ovate, ca. 3 × 8 mm, apex rounded. Stamens 4, ± exserted; filaments basally pilose, apically glabrous, shorter pair 7–8 mm, longer pair 9–10 mm; anther thecae ca. 1 mm, incurved; pollen type 3. Ovary glabrous; style 2.7–2.8 cm, glabrous. Capsule not seen. Fl. Jul–Aug.

• Forests; 1900–2500 m. Xizang (Médog).

119. *Strobilanthes thomsonii* T. Anderson, J. Linn. Soc., Bot. 9: 478. 1867.

汤氏马蓝 tang shi ma lan

Subshrubs 1–2 m tall, pliestesial, anisophyllous. Stems and branches 4-angled, sulcate, glabrous or thinly pubescent. Petiole 2–14 mm or leaves sessile, glabrous; leaf blade ovate to narrowly ovate-elliptic, 12–20 × 4–7 cm, abaxially pale, adaxially glabrous with abundant cystoliths, secondary veins 5–7 on each side of midvein, base cuneate and decurrent onto petiole, margin serrate, apex long acuminate and usually falcate. Inflorescences axillary, simple or branched spikes, 3–9 cm; floral bracts variable in shape, ovate, elliptic, oblanceolate, or spatulate, 4–6 × 2–3 mm, caducous, glabrous or gland-tipped pubescent; bracteoles linear, ca. 2.5 × 0.8 mm, caducous. Flowers imbricate on rachis or to 1 cm apart. Calyx 5–9 mm, accrescent to ca. 1.3 cm in fruit, subequally 5-lobed almost to base; lobes linear, glabrous or pilose, apex acute. Corolla purple, funnel-shaped, 2.5–3.2 cm, curved, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1 cm then curved and widened to 1–1.3 cm at mouth; lobes ovate, ca. 4 × 4 mm, apex rounded. Stamens 4; filaments glabrous, shorter pair ca. 2 mm and strongly incurved, longer pair 3.5–4 mm; anther thecae subspherical, ca. 1 mm, incurved; pollen type 3. Ovary pubescent; style 2.5–3 cm, basally thinly pilose, apically glabrous. Capsule narrowly obovoid, gland-tipped pubescent, 4-seeded. Seeds orbicular in outline, ca. 2 mm in diam., densely covered with appressed trichomes. Fl. Sep–Nov.

Dry forests; ca. 2500 m. Xizang (Cona) [Bhutan, India].

120. *Strobilanthes longgangensis* D. Fang & H. S. Lo, Guihaia 17: 33. 1997.

弄岗马蓝 nong gang ma lan

Perilepta longgangensis (D. Fang & H. S. Lo) C. Y. Wu & C. C. Hu.

Subshrubs to 40 cm tall, strongly anisophyllous. Petiole 2–14 mm; leaf blade narrowly elliptic to rarely ovate-elliptic, smaller of pair (1.5–)3–8.5 × 0.8–3 cm and larger one 6–11.5 × 2.5–4.5 cm, both surfaces glabrous with prominent cystoliths, abaxially paler, secondary veins 4–6 on each side of midvein, base narrowly cuneate and decurrent onto petiole, margin denticulate, apex acuminate. Inflorescences axillary, spikes, 2–4 cm, 1–5-flowered; peduncle ca. 8 mm; bracts narrowly triangular, 3–4 × 1–1.5 mm, persistent, apex acute; bracteoles oblong, 5–6 × ca. 1 mm, glabrous. Flowers distant on rachis, usually only 1 sterile per node. Calyx ca. 5 mm, 5-lobed to near base; lobes resembling bracteoles, glabrous. Corolla purple, campanulate, ca. 2.5 cm, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and narrow for ca. 5 mm then gradually widened to ca. 1.5 cm at mouth; lobes oblong, ca. 4 mm, apex emarginate. Stamens 4, included; filaments sparsely pilose, shorter pair ca. 2 mm, longer pair 6–8 mm; anther thecae subspherical, ca. 1 mm, incurved. Ovary glabrous; style ca. 1.8 cm, hirsute. Capsule not seen. Fl. Nov.

- Limestone slopes; 300–600 m. Guangxi (Longzhou).

121. *Strobilanthes secunda* T. Anderson, J. Linn. Soc., Bot. 9: 480. 1867.

偏花马蓝 pian hua ma lan

Shrubs 0.6–1.5 m tall, strongly but variably anisophyllous. Stems and branches 4-angled, often zigzag, sulcate, glabrous on ridges but rufous scurfy pubescent in channels. Petiole 3–8 cm, appressed pubescent; leaf blade oblong-elliptic, 4–18 × 1.5–7.5 cm, abaxially glabrous except for pubescent midvein, adaxially glabrous, secondary veins 6–9 on each side of midvein, base narrowly cuneate, margin entire to sinuate, apex acuminate. Inflorescences axillary, spikes, 3–18 cm, lax; sterile bracts resembling reduced leaves; floral bracts and bracteoles caducous, presence only known from presence of scars. Flowers solitary or in opposite pairs, 1.5–3 cm apart on rachis. Pedicel ca. 1 mm. Calyx 1.6–2 cm, subequally lobed to 3–4 mm above base; lobes linear-lanceolate, 1.2–1.6 cm, glabrous, apex finely acuminate. Corolla yellow, 2.6–3 cm, curved and somewhat ventricose, outside pubescent, inside glabrous except for trichomes retaining style; tube basally cylindrical and 2–3 mm wide for ca. 6 mm then gradually widened to ca. 1.5 cm at mouth; lobes broadly ovate, ca. 9 × 4 mm, apex rounded. Stamens 4, included; shorter filament pair ca. 3 mm, glabrous; longer filament pair ca. 5 mm, basally villous; anther thecae oblong, ca. 2 × 1 mm, erect; pollen type 3. Ovary clavate, comose; style ca. 2.6 cm, pilose. Capsule narrowly oblong, ca. 20 × 2–2.5 mm, very shortly pubescent, 4-seeded, apex acute. Seeds ovate in outline, ca. 3.5 × 2.5 mm, pilose; areola densely pilose. Fl. Dec–Jan, fr. Jan–Apr.

Forests. Xizang (Médog) [Myanmar].

122. *Strobilanthes mastersii* T. Anderson, J. Linn. Soc., Bot. 9: 481. 1867.

瑞丽叉花草 rui li cha hua cao

Difflugossa scoriarum (W. W. Smith) E. Hossain; *D. shweliensis* (W. W. Smith) E. Hossain; *Goldfussia scoriarum* (W. W. Smith) Bremekamp; *Strobilanthes aborensis* Dunn; *S. scoriarum* W. W. Smith; *S. shweliensis* W. W. Smith.

Herbs 1–1.5 m tall, anisophyllous. Stems 4-angled, erect, sulcate, glabrous to gland-tipped pilose. Petiole 0–2 cm with apical leaves sessile, subglabrous; leaf blade ovate to ovate-lanceolate, 10–15 × 4–7 cm, glabrous except for a few cilia in teeth sinus, secondary veins 5–10 on each side of midvein, base broadly cuneate on basal leaves and rounded on apical leaves, margin serrate, apex acuminate. Inflorescences terminal, panicles of spikes, narrowly ovoid, to 30 cm; peduncle and rachis glabrous when young, densely gland-tipped pilose at maturity; sterile bracts leaflike, lanceolate to ovate, 5–15 × 3–8 mm, tardily caducous, apex acuminate; floral bracts elliptic, 5–6 × 2–3 mm, caducous, apex obtuse; bracteoles oblong, ca. 3 × 1 mm, caducous, abaxially glabrous. Flowers in opposite pairs or solitary through abortion. Calyx 0.8–1.2 cm, subglabrous with sessile glands when young but becoming densely gland-tipped pilose and accrescent, 5-lobed almost to base; lobes lanceolate, with 3 lobes slightly longer than other 2, apex acuminate. Corolla purple, 2.5–3 cm, straight, ventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally

cylindric and ca. 2 mm wide for 1–1.3 cm then widened to ca. 1 cm at mouth; lobes orbicular, ca. 5 mm in diam. Stamens 4, included; filaments glabrous, shorter pair ca. 3 mm, longer pair ca. 6 mm; anther thecae obliquely ellipsoid, ca. 0.8 × 1 mm, incurved; pollen type 3. Ovary slightly pilose at tip; style ca. 2.1 cm, slender, sparsely pilose on basal part. Capsule clavate, ca. 1.5 cm, apically gland-tipped pilose, 4-seeded. Seeds brown, ovate in outline, ca. 2.5 × 2 mm; areola small, verrucose. Fl. Sep–Jan.

Forests on mountain slopes; ca. 1500 m. Xizang (Médog), Yunnan [India].

Strobilanthes mastersii, like *S. hamiltoniana*, commonly has a glabrous inflorescence when it is young but becomes gland-tipped pilose as it matures.

123. *Strobilanthes tenax* Dunn, Bull. Misc. Inform. Kew 1920: 209. 1920.

结壮马蓝 jie zhuang ma lan

Subshrubs to 1 m tall. Stems 4-angled, sulcate, gland-tipped pubescent. Petiole 2–5 mm but apical leaves sessile; leaf blade lanceolate, 8–10 × 2.5–4 cm, glabrous, cystoliths numerous, linear, and prominent, secondary veins 4–6 on each side of midvein, base cuneate, margin serrate, apex acuminate. Inflorescences terminal, a panicle of branched spikes, 3–12 cm; rachis gland-tipped pilose; sterile bracts sessile, leaflike, oblong-lanceolate to ovate, 8–12 × 3–5 mm; floral bracts oblong-elliptic, 5–7 × ca. 2 mm, scarious and early caducous, sparsely gland-tipped pilose, apex obtuse; bracteoles apparently absent. Flowers sessile, with opposite pairs 1–2.5 cm apart on rachis. Calyx ca. 1 cm, outside gland-tipped pubescent, 5-lobed almost to base; lobes linear, apex acute. Corolla color unknown, ca. 3 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and 1–2 mm wide for ca. 0.8 cm then abruptly widened to ca. 1 cm at mouth; lobes broadly ovate, 5–6 × ca. 3 mm, apex rounded. Stamens 4, included; filaments glabrous, shorter pair 1–2 mm, longer pair 3–4 mm; anther thecae obliquely ellipsoid, ca. 1.5 mm, incurved; pollen type 3. Ovary obovoid, ca. 2.5 mm, gland-tipped with a few apical trichomes; style ca. 1.9 cm, thinly pilose. Capsule narrowly obovoid, ca. 1.5 cm, gland-tipped pubescent, 4-seeded. Seeds immature. Fl. Mar.

- Forests; ca. 800 m. Xizang (Médog).

Strobilanthes tenax is only known from the type, and there are many errors in the protologue.

124. *Strobilanthes hamiltoniana* (Steudel) Bosser & Heine, Bull. Mus. Natl. Hist. Nat., B, Adansonia, Sér. 4, 10: 148. 1988.

叉花草 cha hua cao

Ruellia hamiltoniana Steudel, Nomencl. Bot., ed. 2, 2: 481. 1841, based on *Goldfussia colorata* Nees in Wallich, Pl. Asiat. Rar. 3: 89. 1832, not *Ruellia colorata* Blume (1826), nor Vellozo (1829); *Difflugossa colorata* (Nees) Bremekamp; *Strobilanthes colorata* (Nees) T. Anderson (1867), not Nees (1837).

Shrubs 0.5–1.5 m tall, much branched, anisophyllous. Stems 4-angled, sulcate, glabrous. Leaves petiolate or apical ones sessile or subsessile; petiole (0–)0.8–5(–8) cm, glabrous;

leaf blade lanceolate to ovate, smaller pair at least 2/3 size of larger one, 5–19 × 2–8.5 cm, glabrous, densely covered with linear cystoliths, secondary veins 4–7 on each side of midvein, base oblique to rarely slightly oblique and attenuate or on very large leaves subcordate, margin serrulate, apex acuminate. Inflorescences axillary or terminal, panicles, to 30 cm, much branched; rachis angled at ca. 60°, glabrous or rarely pubescent, gland-tipped in fruit; bracts green, broadly obovate, 3–5 × ca. 2 mm, concave, caducous, glabrous, becoming gland-tipped in fruit, margin entire, apex retuse; bracteoles green, oblanceolate to narrowly elliptic, 3–4 × ca. 1 mm, concave, caducous, glabrous, margin entire, apex retuse. Flowers solitary on each node, distant on rachis. Pedicel 1.5–5 mm, glabrous. Calyx 8–10 mm, accrescent to ca. 1.3 cm in fruit, glabrous, sometimes apically gland-tipped pubescent, becoming densely gland-tipped in fruit, 5-lobed almost to base; lobes narrowly elliptic with one longer than others, apex acute to sometimes retuse. Corolla white, lilac, or (in cultivated forms) deep pink with a white tube, 3.5–4 cm, subventricose, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 2 mm wide for ca. 1.3 cm then slightly ventricose and gradually widened to 1.4–1.8 cm at mouth; lobes ovate, 4–5 × ca. 6 mm, apex rounded to retuse. Stamens 4, included; filaments glabrous; shorter filament pair ca. 1 mm, equal; longer filament pair 7–9 mm, unequal, erect; anther thecae white, spherical, ca. 1.2 mm in diam., partially recurved; pollen type 3. Ovary ca. 2.5 mm, glabrous; style ca. 3.8 cm, sparsely pubescent. Capsule green then dark purple, fusiform, 1–1.5 cm, glabrous or with gland-tipped trichomes, 4-seeded. Seeds ovate in outline, ca. 3 × 2 mm, with long trichomes; areola small. Fl. Dec–Jan.

Forests on mountain slopes; 800–2000 m. Xizang (Cona) [Bhutan, India, Myanmar, Nepal].

Strobilanthes hamiltoniana is an ornamental plant. It is widely cultivated in tropical countries and in conservatories in temperate climates. The species is sometimes naturalized, occasionally becoming an invasive weed as on the island of Réunion. Cultivated plants and plants of cultivated origin seem always to be glabrous, pink-flowered, and sterile with dispersal being by cuttings or shoots broken off by grazing animals.

“*Goldfussia tengyuehensis*” (C. Y. Wu, Index Fl. Yunnan. 2: 1675. 1984) belongs here but was not validly published.

125. *Strobilanthes tenuiflora* J. R. I. Wood, Kew Bull. 58: 691. 2003.

纤序马蓝 xian xu ma lan

Subshrubs to 1 m tall, anisophyllous. Stems 4-angled, sulcate, glabrous. Petiole 0.1–3.4 cm, usually very short on smaller leaves, often sulcate, glabrous; leaf blade ovate to ovate-elliptic, 1–13 × 0.5–8 cm, smaller of pair 1/4–1/3 size of larger one, glabrous except for multicellular trichomes in teeth sinuses, adaxially cystoliths prominent, secondary veins 5–7 on each side of midvein and abaxially prominent, base oblique and broadly cuneate, rounded, or slightly cordate, margin slightly serrate to subentire, apex acuminate. Inflorescences terminal, panicles, to 10 cm; peduncle to 3 cm, glabrous; rachis slender, glabrous, repeatedly 3-forked and bent to ca. 90°; bracts subulate, ca. 1 mm, caducous; bracteoles similar to bracts. Flowers 1 per node.

Calyx 4–6 mm, accrescent to ca. 8 mm in fruit, glabrous, 5-lobed almost to base; lobes oblong to oblong-lanceolate with one slightly longer than others, margin pale, apex emarginate. Corolla white, 3.2–4 cm, straight, outside glabrous, inside glabrous except for trichomes retaining style; tube basally cylindrical and ca. 1.5 mm wide for 6–10 mm then slightly ventricose and gradually widened to ca. 1.5 cm at mouth; lobes ovate, ca. 5 × 5 mm, apex acute. Stamens 4, included; filaments glabrous, shorter pair ca. 0.5 mm, longer pair 4–5 mm; anther thecae spherical, ca. 1 mm in diam., partially recurved. Ovary glabrous; style 2.5–3.2 mm, glabrous. Capsule oblong, ca. 1.5 cm, glabrous, 4-seeded, apex acuminate. Seeds ovate in outline, ca. 2 × 1.5 mm, puberulent. Fl. Oct.

Forests; ca. 900 m. Yunnan (Cangyuan) [Thailand].

126. *Strobilanthes euantha* J. R. I. Wood, Kew Bull. 58: 697. 2003.

腾冲马蓝 teng chong ma lan

Herbs 0.5–1.5 m tall, perennial, slightly anisophyllous. Stems dark green, deeply sulcate and ridged, glabrous. Petiole 0–2.6 cm, glabrous; leaf blade ovate to ovate-elliptic, 4–20 × 3–12 cm, abaxially paler green and sparsely pilose along veins, adaxially dark green, pilose along margin, and with prominent cystoliths, secondary veins 5–8 on each side of midvein, base cordate to abruptly narrowed and often somewhat oblique, margin serrate, apex acuminate. Inflorescences terminal, open panicles, to 15 cm; peduncle ca. 3 cm, gland-tipped pilose; rachis gland-tipped pilose; bracts obovate, 1–2 mm, caducous before flowers open, apex rounded; bracteoles similar to bracts. Flowers distant on rachis, usually 1 per node. Pedicel ca. 3 mm, gland-tipped pilose. Calyx ca. 4 mm, accrescent to ca. 7 mm in fruit, glabrous, 5-lobed to ca. 1 mm from base; lobes oblong to oblanceolate, apex truncate to emarginate. Corolla pale lavender to pale pink, 2.2–3.5 cm, arcuate, glabrous; tube basally cylindrical and narrow for 0.6–1.9 cm then ventricose and widened to 8–10 mm at mouth; lobes ovate, ca. 4 × 4 mm, apex acute. Stamens 4; filaments glabrous; shorter filament pair ca. 2 mm, incurved; longer filament pair 1–1.2 cm, erect, slightly exserted; anther thecae spherical, ca. 1 mm in diam. Ovary glabrous; style 2.2–2.7 cm, glabrous. Capsule narrowly oblong-obovoid, ca. 1.4 cm, glabrous, 4-seeded, apex acuminate. Seeds ovate-suborbicular in outline, ca. 2.5 × 2 mm, pubescent. Fl. Sep–Oct, fr. Dec.

Forests; 1500–2100 m. Yunnan (Gaoligong Shan) [Myanmar].

127. *Strobilanthes parvifolia* J. R. I. Wood, Kew Bull. 64: 25. 2009.

小叶马蓝 xiao ye ma lan

Herbs, perennial, anisophyllous. Stems somewhat sulcate with distinct small parallel ridges, glabrous, basally geniculate. Petiole 0–4 mm, glabrous; leaf blade lanceolate, ovate, or ovate-elliptic, 1–3.5 × 1–1.8 cm, smaller of pair ca. 1/3 size of larger one, both surfaces glabrous and with somewhat obscure cystoliths or rarely abaxially with a few gland-tipped trichomes on veins, base broadly to narrowly cuneate and somewhat decurrent onto petiole, margin undulate to slightly crenate, apex acute. Inflorescences leaflike with long few-flowered branches; branches strict, densely covered with short stalked glands,

sparingly 3-forked with subsessile flowers in opposite pairs (rarely solitary) in axils of leaflike bracts at tips of ultimate branches; basal sterile bracts variable in size and shape, sessile or nearly so, oblong-lanceolate to sometimes ovate, elliptic, or oblong, $0.5\text{--}3.5 \times 0.3\text{--}1.5$ cm, often very unequal at each pair, abaxially densely stalked gland-tipped pubescent toward base, base attenuate, margin undulate and sparsely covered with stalked glands, apex acute; floral bracts oblong, ca. 5×1 mm, caducous, gland-tipped pilose; bracteoles oblong, ca. 2×1 mm. Calyx ca. 1.1 cm at anthesis, accrescent to ca. 2 cm in fruit, 5-lobed almost to base; lobes narrowly oblong-lanceolate, 1–1.5 mm wide, subequal, densely covered with relatively short gland-tipped trichomes, apex obtuse. Corolla white flushed violet, 2.5–3 cm, outside glabrous, inside pubescent; tube basally cylindrical and ca. 3 mm wide for ca. 1 cm then gradually widened to ca. 1.2 cm and bent to ca. 90° and then and widened to 1.2–1.5 cm at mouth; lobes broadly ovate, ca. 6×6 mm, apex obtuse. Stamens 4, included; filaments glabrous, shorter pair 1.5–2 mm, longer pair 5–6 mm; anther thecae oblong, ca. 2×0.5 mm; pollen type 16. Ovary glabrous; style ca. 1.5 cm, glabrous. Capsule narrowly clavate, ca. 2.2 cm, glabrous, 4-seeded. Mature seeds not seen. Fl. Sep, fr. Sep–Oct.

- Forest margins on hills; ca. 1600 m. Xizang (Médog).

128. *Strobilanthes ferruginea* D. Fang & H. S. Lo, *Guihaia* 17: 29. 1997.

锈背马蓝 xiu bei ma lan

Perilepta ferruginea (D. Fang & H. S. Lo) C. Y. Wu & C. C. Hu.

Shrubs to 4 m tall, almost glabrous throughout, anisophyllous. Stems 4-angled, sulcate. Petiole to 3 cm; leaf blade broadly elliptic, elliptic, or rarely ovate-elliptic, $4\text{--}18 \times 2\text{--}8$ cm, smaller of pair ca. $1/3$ size of larger one, both surfaces densely covered with cystoliths, abaxially ferruginous when dry, adaxially dark green, secondary veins 7–11 on each side of midvein, base broadly cuneate, margin apically remotely crenate, apex acuminate to caudate. Inflorescences axillary or terminal, spikes, 1–2.5 cm, few flowered; bracts elliptic to oblong, $3.5\text{--}4 \times$ ca. 2 mm, persistent, margin ciliate, apex truncate to rounded; bracteoles oblong to elliptic, ca. 7×2.5 mm. Flowers distant on rachis, usually only 1 fertile per node. Calyx ca. 9 mm; lobes oblong-oblongate, ca. 4 mm, margin ciliolate, apex obtuse. Corolla purple, 3–3.5 cm, ventricose, outside glabrous; tube basally cylindrical and ca. 2 mm wide for ca. 6 mm then gradually widened to ca. 1.4 cm at mouth; lobes ca. 5 mm, apex emarginate. Stamens 4, included; filaments sparsely hirsute, shorter pair ca. 2 mm, longer pair ca. 8 mm; anther thecae oblong, ca. 2 mm. Ovary glabrous; style ca. 1.8 cm, densely hirsute. Capsule oblong, 1.7–2 cm, glabrous, 4-seeded. Seeds ovate in outline, ca. 3 mm, densely covered with appressed trichomes. Fl. Oct–Dec.

- Dense forests on rocky mountains; 400–800 m. Guangxi (Longzhou).

