

## Family 2. POLYGALACEAE

BY SIDNEY FAY BLAKE

Herbs, shrubs, or trees, sometimes scandent, often with glands in the tissue of the leaves, sometimes also in the flowers or fruits. Leaves alternate, opposite, or whorled, simple, entire, short-petioled, without stipules or with small corneous often peziziform stipular glands. Flowers perfect, zygomorphic, racemed, spicate, or rarely paniced or solitary, each subtended by a bract and two bractlets. Sepals 5, free or the two lower united, one posterior, two anterior, two lateral and interior, the latter (wings) usually much larger and petaloid. Petals 3, or rarely 5, hypogynous, the anterior one (keel) boat-shaped, often with a terminal beak or fimbriate crest, the two upper usually ligulate or ovate, often galeate, usually united to the staminal sheath at base and often also to the keel, the two lateral rarely present, short, free, exterior. Stamens usually 8, rarely 3-7, the filaments united for most of their length into a sheath split on the upper side and usually united at base to the keel or upper petals or both, or rarely free; anthers usually confluent 1-celled, opening by a subterminal pore. Intrastaminal disk present or reduced to a gland at base of ovary or wanting. Gynoecium of 1 or 2, rarely 3-5, united carpels; style solitary; stigma 2-lobed, often tufted. Ovules solitary, rarely 2-6, pendulous. Fruit a capsule, drupe, or samara, loculicidally dehiscent or indehiscent. Seeds solitary in each cell or rarely (in extralimital forms) 2, usually pubescent, arillate, and with endosperm. Embryo straight, axial.

Ovary and fruit 2-celled; fruit a dehiscent capsule, very rarely with one of the cells abortive.

1. POLYGALA.

Ovary and fruit 1-celled; fruit indehiscent.

Keel with a plicate crest; fruit a samara, with a large wing on the lower side.

2. ELSOTA.

Keel not crested; fruit drupe-like, slightly fleshy, not at all or only very obscurely winged, or samaroid, narrowly and nearly equally winged on both margins.

3. MONNINA.

### 1. POLYGALA L. Sp. Pl. 701. 1753.

*Phylax* Noronha, Verh. Batav. Gen. 5<sup>4</sup>: 3, *nomen nudum*. 1790.

*Psychanthus* Raf. Specch. 1: 116. 1814.

*Triclisperma* Raf. Specch. 1: 117. 1814.

*Badiera* DC. Prodr. 1: 334. 1824.

*Brachytropis* DC.; Reichenb. Consp. 120. 1828.

*Sexilia* Raf. New Fl. 4: 87. 1838.

*Plostaxis* Raf. New Fl. 4: 87. 1838.

*Anthaloea* Raf. New Fl. 4: 88. 1838.

*Corymbula* Raf. New Fl. 4: 88, hyponym. 1838.

*Zoroxus* Raf. New Fl. 4: 88. 1838.

*Asemeia* Raf. New Fl. 4: 88. 1838.

*Pilostaxis* Raf. New Fl. 4: 89, as synonym. 1838.

*Isolophus* Spach, Hist. Vég. 7: 112. 1839.

*Tricholophus* Spach, Hist. Vég. 7: 114. 1839.

*Chamaebuxus* Spach, Hist. Vég. 7: 125. 1839.

*Senega* Spach, Hist. Vég. 7: 128. 1839.

*Semeiocardium* Zoll. Tijdschr. Nederl. Ind. 17: 245. 1858.

*Phlebotaenia* Griseb. Mem. Am. Acad. II. 8: 156. 1860.

*Microlophium* Fourr. Ann. Soc. Linn. Lyon II. 17: 195. 1869.

*Heterosamara* Kuntze, Rev. Gen. 47. 1891.

*Galypola* Nieuwl. Am. Midl. Nat. 3: 179. 1914.

Herbs, shrubs, or trees, never scandent, rarely with spinescent branches. Leaves alternate, sometimes opposite or whorled, simple, entire, short-petioled, very rarely with stipular glands.



Flowers in terminal or axillary rarely extra-axillary racemes, or rarely umbellate. Sepals 5, the three outer herbaceous or the two lower very rarely petaloid, free or the two lower connate, deciduous or persistent; the two inner (wings) petaloid or rarely subherbaceous, usually much larger than the others, deciduous or persistent. Petals normally 3, united at base, the lower (keel) boat-shaped, clawed, sometimes 3-lobed, unappendaged or usually with an apical beak or crest; the two upper ligulate to ovate, sometimes galeate, united to staminal tube or keel or both, at least at base; the two lateral petals rarely present, always very small. Stamens 8 or rarely 6, the filaments united nearly to apex into a sheath split on the upper side, adnate to keel and upper petals at base; anthers usually confluent 1-celled, opening by an apical or introrse-apical pore. Ovary 2-celled, one of the cells very rarely abortive in fruit; ovules solitary, pendulous from the apex of the central placenta; style usually slender and often elongate, bent, more or less excavated at apex; stigma 2-lobed, often tufted. Capsule equally or unequally 2-celled (one cell rarely more or less completely abortive), winged, margined, or marginless, compressed contrary to the partition, usually membranaceous-herbaceous, rarely subcoriaceous; cells loculicidally dehiscent or the lower rarely indehiscent. Seeds globose to fusiform or conic, usually pubescent, almost always arillate, with or without endosperm; testa crustaceous.

Type species, *Polygala vulgaris* L.

Keel blunt, without crest or beak.

Leaves with very numerous strong nearly parallel veins; capsule large, broadly winged on one side, narrowly or broadly winged on the other.

Leaves with few distant veins; capsule never broadly winged.

Calyx with sepals all free.

Wings very small, about one-third longer than sepals; capsule subcoriaceous, thick-walled.

Wings much larger than sepals; capsule membranaceous-herbaceous, thin-walled.

Sepals and wings at least in part deciduous.

Lower sepals like the upper one herbaceous, deciduous like the wings, or with them rarely subpersistent; aril pubescent at least at apex.

Capsule and leaves not obviously glandular.

Leaves small, mostly 5–20 mm. long, usually distinctly dimorphous, the lower shorter, oval or oblong-oval, the upper oblong to linear, or rarely uniform, but then smaller than in the next group.

Leaves comparatively large, mostly 2–6 cm. long, 1–3 cm. wide, ovate, gradually reduced upward, not noticeably dimorphous.

Capsule and leaves bearing large glands.

Lower sepals petaloid, deciduous like the wings, the upper one herbaceous, persistent; aril glabrous.

Sepals and wings persistent, the sepals herbaceous.

Calyx with two lower sepals connate; wings and sepals persistent.

Keel with beak or crest.

Keel with a conic or cylindric beak (obscure in *P. acanthoclada*), not crested.

Sepals (except usually the upper) and wings deciduous.

Sepals and wings persistent.

Keel with a fimbriate crest.

Sepals and wings deciduous.

Sepals and wings persistent.

Capsule unmarginated or narrowly and equally margined on both cells.

Capsule winged or margined on the upper cell, marginless on the lower.

I. PHLEBOTAENIA.

II. BADIERA.

III. MICROTHRIX.

IV. HEBANTHA.

V. ADENOPHORA.

VI. BILOBA.

VII. HUATECA.

VIII. HEBECLADA.

IX. EURHINOTROPIS.

X. PANTOMONE.

XI. TRICLISPERMA.

XII. TIMUTUA.

XIII. MONNINOPSIS.

I. PHLEBOTAENIA

Leaves 2.4–5.5 cm. long.

Leaves 8–12.5 cm. long.

1. *P. cuneata*.

2. *P. Cowellii*.

II. BADIERA

Leaves scabrous above.

Capsule hispidulous at maturity.

Capsule merely ciliolate at maturity.

Leaves 1.5–3 cm. long, emarginulate; capsule 6.2–6.8 mm. wide.

Leaves 1.3–1.8 cm. long, rounded at apex; capsule 8.5 mm. wide.

Leaves strigillose but smooth to the touch above.

Peduncle shorter than the pedicels; racemes spiciform, very densely flowered.

3. *P. Penaea*.

4. *P. portoricensis*.

5. *P. scabridula*.



Capsule subquadrate or broadly cuneate-quadrate, little broader than long, slightly lobed or merely emarginate, with erect or ascending lobes.

Capsule usually subquadrate, 11 mm. wide or less.

Leaves ovate-lanceolate to oval, or when obovate not abruptly short-pointed at apex.

Leaves 0.6–2.8 (rarely 5) cm. long; petioles 1–2.5 mm. long.

Leaves obovate or oval, 6–19 mm. long, usually with fascicles of smaller ones in their axils.

Leaves ovate to elliptic or oval, 1.5–2.8 (rarely 5) cm. long, without axillary fascicles.

Leaves 3.5–8.5 cm. long; petioles 3–9 mm. long.

Leaves broadly obovate or oval, abruptly short-pointed at apex.

Capsule broadly cuneate, 12–13.5 mm. wide; leaves broadly oval, rounded and usually emarginate at apex.

Capsule transversely oblong, much broader than long, deeply lobed, with spreading or divergent lobes.

Peduncle longer than the pedicels; racemes loosely flowered.

6. *P. guantanamana*.

7. *P. oblongata*.

8. *P. jamaicensis*.

9. *P. stipitata*.

10. *P. montana*.

11. *P. propinqua*.

12. *P. Fuertesii*.

### III. MICROTHRIX

Leaves nearly uniform, oval or ovate.

Plant densely pubescent with spreading hairs.

Capsule merely ciliate; wings shorter than keel.

Capsule puberulous on the sides; wings longer than keel.

Plant puberulous with incurved or appressed hairs.

Wings subpersistent.

Wings deciduous.

Leaves oval or elliptic, obtuse or rounded.

Flowers 3.8 mm. long.

Flowers 5.3–5.8 mm. long.

Leaves ovate, acuminate.

Leaves more or less dimorphous, the lower oval or oblong, the upper longer, linear to oblong, elliptic, or ovate.

Wings glabrous; capsule merely ciliate.

Wings pubescent at least at base, or if rarely glabrous, then capsule pubescent on the sides.

Aril small, the depth of the entire or merely denticulate-lobulate scarious margin less than the height of the corneous umbo.

Hairs of stem all incurved or appressed.

Capsule more or less pubescent on sides.

Flowers 4–5 mm. long.

Aril sessile, higher than long.

Aril subpedicellate by the pointed base of seed, longer than high.

Flowers 6–7 mm. long.

Stems hirsute-tomentose above.

Stems barely puberulous above.

Capsule merely ciliate at maturity.

Middle and upper leaves strongly reduced, 5–14 mm. long, linear or lance-linear.

Aril with more or less distinct dorsal lobe, subpedicellate by the pointed base of seed.

Aril without distinct dorsal lobe, subsessile.

Aril with subglabrous umbo.

Aril with densely pilose umbo.

Middle and upper leaves not reduced, 15–31 mm. long.

Middle and upper leaves obovate-oblong, 4.5–7 mm. wide.

Middle and upper leaves linear, 1.5–3 mm. wide.

Hairs of stem (at least in part) wide-spreading.

Hairs of stem all short and wide-spreading; leaves not reticulate.

Hairs of stem partly long and spreading, partly short and incurved; leaves reticulate.

Middle and upper leaves linear or linear-lanceolate, 1.8–4 mm. wide.

Middle and upper leaves oblong-lanceolate or oval, 4.5–16 mm. wide.

Aril larger, the depth of the lobed or lobulate scarious margin equaling or exceeding the height of the corneous umbo.

Capsule merely ciliate at maturity; aril not veil-like.

Upper leaves linear to narrowly lanceolate.

Stems incurved-puberulous, rarely nearly or quite glabrous.

Upper leaves strongly reduced, 5–14 (–23) mm. long.

13. *P. ovatifolia*.

14. *P. buxifolia*.

15. *P. myrtilloides*.

16. *P. Robinsonii*.

17. *P. Xanti*.

18. *P. serpens*.

19. *P. Pavoni*.

20. *P. Magdalenae*.

21. *P. piliophora*.

22. *P. leptosperma*.

44. *P. oaxacana*.

23. *P. Barbeyana*.

24. *P. zacatecana*.

25. *P. intricata*.

26. *P. Palmeri*.

27. *P. racemosa*.

28. *P. rectipilis*.

36. *P. retifolia*.

37. *P. amphothrix*.

29. *P. reducta*.



- Upper leaves not reduced, 17-36 mm. long.  
 Stems sparsely spreading-pubescent, glabrate.  
 Upper leaves ovate to elliptic-oblong.  
 Wings 6-6.5 mm. long.  
 Wings 4-5 mm. long.  
 Scarios border of aril barely as deep as height of umbo; keel purplish.  
 Scarios border of aril distinctly deeper than height of umbo; keel yellowish-green.  
 Capsule pubescent on sides at maturity, or if merely ciliate, then aril veil-like.  
 Hairs of stem (at least in part) wide-spreading.  
 Hairs of stem all short and wide-spreading; leaves not reticulate.  
 Hairs of stem partly long and spreading, partly short and incurved.  
 Middle and upper leaves linear or linear-lanceolate, 1.8-4 mm. wide.  
 Middle and upper leaves oblong-lanceolate or oval, 4.5-16 mm. wide.  
 Hairs of stem all incurved or appressed.  
 Aril veil-like, with broad scarios lobulate margin, covering one-third to three-fifths of seed, the dorsal margin vertically descending, the lower margin nearly or quite horizontal.  
 Sepals and wings quickly deciduous.  
 Sepals and wings subsistent.  
 Aril not veil-like.  
 Upper leaves ovate to elliptic or lance-oblong.  
 Lobes of aril oblong to deltoid; wings 5-5.8 mm. long.  
 Leaves oval or elliptic-oblong, 3-9 mm. long; stems procumbent.  
 Leaves ovate to elliptic, 1-4 cm. long; stems erect.  
 Leaves ovate or elliptic-ovate, obtuse or rounded; wings oval, 4-4.6 mm. wide.  
 Leaves elliptic or lance-elliptic, acute to acuminate; wings elliptic, 2.5-3.2 mm. wide.  
 Lobes of aril linear or lance-linear; wings 3.5-5 mm. long.  
 Upper leaves linear.  
 Leaves 2.5-3 mm. wide; wings ciliate.  
 Leaves 3-17 mm. wide; wings glabrous.
30. *P. longa*.  
 31. *P. neurocarpa*.  
 32. *P. oöphylla*.  
 33. *P. brachyanthema*.  
 34. *P. Brandegeana*.  
 35. *P. orthotricha*.  
 36. *P. retifolia*.  
 37. *P. amphothrix*.  
 38. *P. obscura*.  
 39. *P. Lozani*.  
 40. *P. parrasana*.  
 41. *P. annectens*.  
 42. *P. Russelliana*.  
 43. *P. compacta*.  
 44. *P. oaxacana*.  
 45. *P. polymorpha*.
- IV. HEBANTHA
- Capsule merely ciliate at maturity.  
 Flowers 5.5-7 mm. long.  
 Leaves subgriseous-velutinous.  
 Leaves not at all velutinous.  
 Hairs of stem all incurved or appressed.  
 Stem subterete; wings 5.5-6.6 mm. long.  
 Stem and leaves sparsely strigillose; leaves narrowly lanceolate.  
 Stem and leaves densely strigillose or incurved-puberulous; leaves ovate to rhombic-lanceolate.  
 Stem strongly angled; wings 4.5-5 mm. long.  
 Hairs of stem (at least in part) wide-spreading.  
 Leaves lanceolate; wings ciliate.  
 Leaves ovate; wings not ciliate.  
 Flowers 9 mm. long.  
 Capsule pubescent on sides at maturity.  
 Wings orbicular-oval or broadly oval, less, usually much less, than twice as long as wide.  
 Keel 3.2-3.5 mm. long; wings 3.8 mm. long.  
 Keel 4.2-6.8 mm. long; wings 4.5-8.3 mm. long.  
 Wings rather densely pubescent over whole outer surface.  
 Sepals 4-4.5 mm. long; capsule reticulate.  
 Sepals 2.5-3 mm. long; capsule scarcely reticulate.  
 Wings sparsely pubescent or puberulous chiefly at apex and base and along costa, or subglabrous.  
 Wings 6.5-9 mm. long.  
 Aril not distinctly 3-lobed.  
 Capsule spreading-pilosulous; aril with minute umbo.  
 Capsule incurved-puberulous; umbo medium-sized.
46. *P. Sanctae-Luciae*.  
 47. *P. longipes*.  
 48. *P. velata*.  
 49. *P. polyedra*.  
 50. *P. Galeottii*.  
 51. *P. rivinaefolia*.  
 52. *P. Seleri*.  
 53. *P. brachytropis*.  
 54. *P. americana*.  
 55. *P. pedicellata*.  
 56. *P. cuspidulata*.  
 57. *P. appressipilis*.



- Aril distinctly 3-lobed, the dorsal lobe spreading, 3-toothed at apex.  
 Wings 4.5–5.8 mm. long.  
 Wings suborbicular, glabrous except for the ciliolate margin and the finely puberulous costa; sepals 1–2 mm. long.  
 Wings oval, pubescent at least along costa; sepals 2–3.8 mm. long  
 Dorsal margin of aril strongly descending; umbo medium or large.  
 Hairs of stem all incurved.  
 Hairs of stem partly short and incurved, partly long and spreading or ascending.  
 Dorsal margin of aril horizontal or erectish; umbo minute.  
 Leaves lanceolate; dorsal margin of aril horizontal.  
 Leaves broadly ovate; dorsal margin of aril obliquely erectish.
- Wings oblong, oblong-oval, or obovate-oblong, from nearly twice to four times as long as wide.  
 Wings 6.5 mm. long or less.  
 Wings very narrowly oblong, 1.2–1.8 mm. wide, pubescent nearly all over outside with spreading hairs.  
 Wings broader, pubescent chiefly along costa.  
 Wings sparsely long-hairy dorsally; leaves lance-elliptic to linear.  
 Wings incurved-puberulous along costa and toward apex; leaves ovate or lance-ovate.  
 Seed glabrous; aril cloak-like, 1.1 mm. high, closely investing seed.  
 Seed pubescent; aril umbrella-shaped, 3.2 mm. high, loose, with erectish dorsal margin.
- Wings 7–10 mm. long.  
 Leaves with numerous long straight spreading hairs on veins beneath, some shorter and incurved hairs usually intermixed.  
 Stem-hairs distinctly biform, some short and incurved, some long and spreading; wings sparsely puberulous at apex and base and along costa.  
 Stem-hairs less distinctly biform, the shorter ones somewhat spreading, the others not much exceeding them in length; wings rather densely spreading-pilose along costa and toward apex.  
 Leaves with hairs of veins beneath nearly all incurved or appressed.  
 Aril strongly lobulate.  
 Aril somewhat 4-angled but subentire.
- V. ADENOPHORA
- Leaves obovate.  
 Leaves incurved-pubescent.  
 Leaves nearly glabrous.  
 Leaves linear to oblong-lanceolate.
- VI. BILOBA
- Lower sepals glabrous; flowers purple; racemes many-flowered.  
 Bracts deciduous, equaling the pedicels; stems canescent-pilosulous.  
 Bracts persistent, shorter than the pedicels; stems incurved-pubescent but green.  
 Lower sepals ciliate; flowers greenish; racemes 1–4-flowered.
- VII. HUATECA
- A single species.
- VIII. HEBECLADA
- Flowers large, the wings 7.5–14 mm. wide; shrubs, with comparatively large ovate leaves.  
 Sepals densely ciliate or ciliolate.  
 Wings densely ciliolate.  
 Branches of inflorescence puberulent to densely strigose.  
 Seed pilose-tomentose; capsule 8 mm. long, 10 mm. wide.  
 Seed gray-pilose, not tomentose; capsule 7 mm. long, 7.5 mm. wide.  
 Branches of inflorescence subtomentose.  
 Wings glabrous or minutely glandular-ciliolate.  
 Wings 12–15 mm. long.  
 Wings 8–9 mm. long.
58. *P. antillensis*.  
 59. *P. brachysepala*.  
 60. *P. microtricha*.  
 61. *P. Hayesii*.  
 62. *P. chiapensis*.  
 63. *P. consobrina*.  
 64. *P. hebantha*.  
 65. *P. trichoptera*.  
 66. *P. guatemalensis*.  
 67. *P. Durandi*.  
 68. *P. biformipilis*.  
 69. *P. panamensis*.  
 70. *P. costaricensis*.  
 71. *P. isotricha*.  
 72. *P. glandulosa*.  
 73. *P. phoenicistes*.  
 74. *P. macradenia*.  
 75. *P. Purpusii*.  
 76. *P. Conzattii*.  
 77. *P. Parryi*.  
 78. *P. tehuacana*.  
 79. *P. floribunda*.  
 80. *P. sphaerospora*.  
 81. *P. Securidaca*.  
 82. *P. apopetala*.  
 83. *P. hondurana*.



Sepals sparsely glandular-ciliate; wings glabrous.  
Flowers small or medium, the wings 2-5.3 (rarely 8) mm. wide; herbs,  
with small mostly linear or oblong leaves.

Plants perennial; wings usually surpassing the capsule.

Wings quadrate-suborbicular, the lamina wider than long,  
strongly prominulous-reticulate.

Wings cuneate-obovate or broadly obovate, the lamina not as  
wide as long, less reticulate.

Stem densely pubescent.

Leaves elliptic, 5-11 mm. wide.

Hairs of stem all incurved or incurved-spreading.

Hairs of stem partly long, straight, and wide-  
spreading, partly short and incurved.

Leaves linear, 1.5-2 mm. wide.

Stem finely incurved-puberulous or glabrous.

Stem glabrous.

Stem finely incurved-puberulous.

Plants annual; wings usually shorter than the capsule.

Plant pubescent or strongly puberulous.

Plant glabrous or very sparsely incurved-puberulous.

Wings obovate, narrower than long, not reticulate; leaves  
linear or linear-lanceolate.

Wings quadrate-suborbicular, as broad as or broader than  
long, reticulate; leaves elliptic to linear-elliptic.

84. *P. tonsa*.

85. *P. grandiflora*.

86. *P. Planellasi*.

87. *P. mollis*.

88. *P. Wrightii*.

89. *P. ambigena*.

90. *P. miamiensis*.

91. *P. bryzoides*.

92. *P. cubensis*.

93. *P. Krugii*.

#### IX. EURHINOTROPIS

Flowers 8-12 mm. long.

Plant glabrous or sparsely and minutely strigillose; branches not  
spinescent.

Aril with conspicuous conic or cylindric umbo; capsule firm-  
walled, scarcely reticulate; no basal racemes of cleistog-  
amous flowers.

Flowers purplish and yellowish; wings merely ciliate.

Flowers yellowish or greenish-white; wings densely puber-  
ulous.

Aril with short and rounded umbo, concealed by the scarious  
lobes; capsule thin-walled, reticulate; basal racemes of  
cleistogamous flowers present.

Plant densely spreading-puberulous, at least on the younger parts;  
branches spinescent.

Flowers 4-5.5 mm. long.

Branches spinescent; flowers scattered or few, not forming genicu-  
late racemes; keel scarcely beaked.

Branches not spinescent; flowers in usually geniculate racemes;  
keel distinctly beaked.

Leaves oval, glabrous or sparsely incurved-puberulous.

Leaves 1-2 cm. long, 4-12.5 mm. wide.

Leaves 4-9 mm. long, 2-6.5 mm. wide.

Leaves squamiform to lanceolate, or when broader densely  
pubescent.

Leaves not squamiform.

Leaves, or at least the lower ones, oval to suborbicular,  
like the stem densely spreading- or incurved-spreading-  
pubescent.

Leaves mostly linear to lanceolate, merely incurved-  
puberulous like the stem.

Leaves squamiform, 1-4.5 mm. long.

94. *P. Fishiae*.

95. *P. cornuta*.

96. *P. californica*.

97. *P. subspinosa*.

98. *P. acanthoclada*.

99. *P. nitida*.

100. *P. eucosma*.

101. *P. Lindheimeri*.

102. *P. Tweedyi*.

103. *P. minutifolia*.

#### X. PANTOMONE

Stem densely canescent-pilosulous; leaves obovate or oblanceolate.

Stem sparsely strigillose; leaves linear to linear-lanceolate.

104. *P. Rusbyi*.

105. *P. desertorum*.

#### XI. TRICLISPERMA

A single species.

106. *P. paucifolia*.

#### XII. TIMUTUA

Sepals not decurrent on the pedicels; pedicels not winged; flowers never truly yellow, the racemes  
never compounded into a cymose panicle.

Seeds not obconic or silky-comose.

Hairs of seed not glochidiate.

Cleistogamous flowers absent; flowers white to purple.

Leaves never ovate, rarely more than 4 mm. wide.

Wings equaling or exceeding keel, rarely slightly  
shorter; stem not glaucous; aril 2-lobed,  
rarely obsolete.

Leaves linear to obovate, if rarely scale-like, then  
the lower whorled.



- Racemes cylindric or conic-cylindric, acuminate or at least distinctly tapering above.  
Plants annual, single-stemmed.  
Wings 1.2-3 mm. long.  
Leaves alternate throughout, or whorled only at base of stem.  
Seed glabrous; aril very minute.  
Racemes very dense; bracts persistent. 107. *P. gracillima*.  
Racemes rather loose; bracts deciduous. 108. *P. decidua*.  
Seed pubescent; aril evident.  
Stem finely stipitate-glandular or puberulous.  
Plant finely stipitate-glandular; seed not rostrate. 109. *P. paniculata*.  
Plant finely puberulous with eglandular hairs; seed short-rostrate. 110. *P. rhynchosperma*.  
Stem glabrous.  
Aril tiny, about one-tenth as long as seed. 111. *P. leptocaulis*.  
Aril one-third to one-half as long as seed.  
Wings narrowly spatulate-obovate; flowers rosy. 112. *P. gracilis*.  
Wings obovate-oval to suborbicular; flowers white or purplish-tinged. 113. *P. verticillata ambigua*.  
Leaves whorled at least to middle of stem.  
Sepals shorter than wings, ovate to orbicular-ovate.  
Flowers white, sometimes purplish-tinged, or faintly pinkish.  
Capsule oval to oblong-oval.  
Bracts quickly deciduous. 113. *P. verticillata*.  
Seed pubescent. 114. *P. leptostachys*.  
Seed glabrous. 115. *P. Wightiana*.  
Bracts subsistent. 116. *P. asperuloides*.  
Capsule suborbicular. 117. *P. Sinaloae*.  
Flowers magenta-pink.  
Sepals longer than the wings, filiform-subulate from an ovate base. 128. *P. crinita*.  
Wings 3-3.3 mm. long. 136. *P. Chapmanii*.  
Leaves all alternate. 137. *P. Hookeri*.  
Leaves whorled at least below.  
Plants biennial or perennial, usually several-stemmed.  
Leaves not squamiform.  
Capsule 1.3-3.1 mm. long, not ovate-elliptic; seed 1.3-2.5 mm. long; aril usually more than half as long as seed.  
Leaves whorled at least to middle of stem.  
Seed 1.3-2.1 mm. long; capsule 1.4-2.5 mm. long.  
Seed ellipsoid-cylindric, short-beaked at base. 118. *P. flagellaris*.  
Seed ellipsoid, not beaked at base.  
Aril two-thirds as long as seed or less.  
Capsule suborbicular, 1.3-1.6 mm. long. 116. *P. asperuloides*.  
Capsule oval, 2.2-2.5 mm. long. 119. *P. Boykini*.  
Aril essentially as long as seed.



- Sepals glandular-ciliolate; seed 2 mm. long. 120. *P. aparinoides*.
- Sepals not glandular-ciliolate; seed 1.3-1.6 mm. long.
- Leaves fleshy, spatulate-obovate; flowers pink; wings obovate. 121. *P. turgida*.
- Leaves not fleshy, mostly lanceolate or elliptic; flowers white; wings oval. 122. *P. subalata*.
- Seed 2.3-2.5 mm. long; capsule elliptic or oblong-elliptic, 2.5-2.9 mm. long. 124. *P. alba suspecta*.
- Leaves alternate throughout or whorled only at base of stem.
- Wings 1.8-2.1 mm. long; seed cylindric-ellipsoid, 1.7 mm. long. 123. *P. praetervisita*.
- Wings 2.6-3.5 mm. long; seed ellipsoid, 2.3-2.5 mm. long.
- Capsule elliptic or oblong-elliptic. 124. *P. alba*.
- Capsule ovate-oblong. 125. *P. hecatantha*.
- Capsule 3-4 mm. long, ovate-elliptic; seed ellipsoid-obconic, rostrate at base, 2.8 mm. long; aril less than half as long as seed. 126. *P. Wilsonii*.
- Leaves squamiform, 5 mm. long or less. 127. *P. squamifolia*.
- Racemes capitate, ovoid, or cylindric, obtuse or merely apiculate.
- Sepals filiform-subulate from a short ovate base, longer than the wings.
- Sepals lanceolate to oval, shorter than the wings.
- Wings broadly elliptic or oval, (2.8-) 4.5-6.3 mm. long, about twice as long as keel; aril more than half as long as seed.
- Leaves alternate, linear to linear-elliptic.
- Racemes not comose at apex; seed subglobose-pyriform. 129. *P. viridescens*.
- Racemes slightly comose at apex; seed ellipsoid. 130. *P. hygrophila*.
- Leaves in whorls of three, oval or obovate. 131. *P. Timoutou*.
- Wings equaling or but little longer than keel; aril usually less than half as long as seed.
- Leaves all alternate.
- Racemes 4-6 mm. thick; wings 2.1-2.5 mm. long; pedicels 0.8-1 mm. long. 132. *P. Nuttallii*.
- Racemes 6-13 mm. thick; wings 2.7-6 mm. long; pedicels 1.3-2.8 mm. long.
- Bracts deciduous.
- Wings 2.7-3.6 mm. long; pedicels 1.8-2 mm. long; racemes usually 6-9 mm. thick. 133. *P. mariana*.
- Wings 3.5-4.7 mm. long; pedicels 2.2-2.8 mm. long; racemes usually 10-12 mm. thick. 134. *P. Harperi*.
- Bracts persistent.
- Racemes 9-13 mm. thick; wings 3-6 mm. long; capsule 2.5-3 mm. long. 135. *P. Curtissii*.



- Racemes 6–10 mm. thick;  
wings 3–3.8 mm. long;  
capsule 1.8–2 mm. long. 136. *P. Chapmanii*.
- Leaves whorled at least below.  
Plants annual.  
Aril four-fifths as long as  
seed or more; wings  
mucronate to acumi-  
nate at apex.  
Wings ovate to ovate-ob-  
long, merely acute  
and short-mucro-  
nate; racemes 6–12  
mm. thick.  
Racemes acuminate to  
apiculate; wings  
1.3–1.5 mm. wide;  
leaves 0.5–1 mm.  
wide. 137. *P. Hookeri*.
- Racemes mostly ob-  
tuse; wings 1.5–2.3  
mm. wide; leaves  
1–5 mm. wide. 138. *P. brevifolia*.
- Wings acuminate and  
strongly cuspidate from  
a deltoid base; racemes  
10–17 mm. thick. 139. *P. cruciata*.
- Aril two-thirds as long as  
seed or less; wings usu-  
ally rounded at apex.  
Wings 1–1.8 mm. long;  
leaves chiefly linear.  
Pedicels 1.2–1.5 mm.  
long; wings 1.8 mm.  
long. 140. *P. conferta*.
- Pedicels less than 1  
mm. long; wings 1–  
1.3 mm. long. 141. *P. sphaerocephala*.
- Wings 3 mm. long; leaves  
rhomboidal. 142. *P. crucianelloides*.
- Plants perennial.  
Flowers rosy; leaves rhom-  
boidal. 142. *P. crucianelloides*.
- Flowers white; leaves linear  
to spatulate-obovate.  
Leaves linear-lanceolate. 143. *P. saginoides*.
- Leaves spatulate-obovate. 144. *P. spathulata*.
- Leaves scale-like, strictly alternate, 0.5–2 mm.  
long. 145. *P. setacea*.
- Wings less than half as long as keel; stem glaucous;  
aril cellular, equitant, not obviously lobed. 146. *P. incarnata*.
- Leaves lance-ovate or lance-elliptic to ovate or oval-  
ovate, mostly 0.8–3 cm. wide. 147. *P. Senega*.
- Cleistogamous flowers present, borne on short leafless basal  
branches; flowers bright rosy-purple, in loose racemes.  
Capsule oval, 2.5–4 mm. long; seed 1.8–2.8 mm. long. 148. *P. polygama*.
- Capsule oblong, 4.1–4.3 mm. long; seed 3.2–3.5 mm. long. 149. *P. Lewtonii*.
- Hairs of seed glochidiate.  
Stem densely pedicellate-glandular, rather leafy; wings  
obovate-oval, 2.3–2.5 mm. long. 150. *P. glochidiata*.
- Stem glabrous or sparsely papillose-glandular, usually  
nearly naked at flowering time; wings oval, 3 mm. long. 151. *P. uncinata*.
- Seeds obconic, densely silky-comose.  
Capsule much longer than wings.  
Stem densely pedicellate-glandular; wings equaling keel. 152. *P. Berlandieri*.
- Stem glabrous; wings much shorter than keel. 153. *P. brachyptera*.
- Capsule about equaling wings or shorter.  
Plant annual.  
Wings strongly cuspidate. 154. *P. longicaulis*.
- Wings rounded to merely apiculate.  
Wings 4.7–5.3 mm. long; aril minute. 155. *P. adenophora*.
- Wings 2.7–3.6 mm. long; aril 0.5–1.3 mm. long.  
Crest of keel of 3–4 pairs of lobes; aril 0.5 mm.  
long. 156. *P. variabilis*.
- Crest of keel of 2 pairs of lobes; aril 1.2–1.3 mm.  
long. 157. *P. longiloba*.
- Plant perennial. 158. *P. perennis*.
- Sepals decurrent on the winged pedicels; flowers yellow or orange, often turning green in drying, or  
if white, with the racemes compounded into a cymose panicle.



- Racemes solitary at tips of stems and branches, capitate or thick-cylindric, 9–20 mm. thick; bracts mostly deciduous.  
 Wings caudate-acuminate, 6.5–7.5 mm. long; flowers subsessile; plant essentially scapose, the stem naked or with one or two leaves; seed rostrate at base. 159. *P. nana*.  
 Wings short-pointed to cuspidate, 5–6.8 mm. long; pedicels 2.2–4 mm. long; stems leafy; seed rounded at base.  
 Flowers turning green in drying; wings cuspidate-mucronate. 160. *P. Rugelii*.  
 Flowers remaining yellow in drying; wings short-pointed. 161. *P. lutea*.  
 Racemes several or many, cymosely arranged at apex of stem and branches, 6–13 mm. thick; bracts persistent.  
 Basal leaves spatulate or obovate, obtuse or rounded, 1–2.2 cm. long; seed pubescent, ellipsoid.  
 Flowers white; pedicels 0.5–1 mm. long; capsule broader than long.  
 Wings rather long-cuspidate, slightly narrowed at base; aril about one-half as long as seed. 162. *P. Balduini*.  
 Wings short-cuspidate, rounded at base; aril very minute. 163. *P. Carteri*.  
 Flowers yellow, turning green in drying; pedicels 1.3–2.3 mm. long; capsule as long as broad. 164. *P. ramosa*.  
 Basal leaves linear or lance-linear, attenuate, 3.5–14 cm. long; seed glabrous, subglobose. 165. *P. cymosa*.

## XIII. MONNINOPSIS

- Capsule with one or both cells strongly rugose or transversely veined.  
 Plants perennial; flowers 3–3.5 mm. long. 166. *P. pterocarya*.  
 Plants annual; flowers 2–2.2 mm. long. 167. *P. rhysocharpa*.  
 Capsule not rugose.  
 Capsule more than twice as long as wings. 168. *P. semialata*.  
 Capsule less than one and one-half times as long as wings.  
 Stem glabrous; flowers 3–5 mm. long.  
 Flowers white.  
 Capsule longer than wings. 169. *P. hemipterocarpa*.  
 Capsule shorter than wings. 170. *P. macroloncha*.  
 Flowers violaceous. 171. *P. microloncha*.  
 Stem strigillose or puberulous; flowers usually smaller.  
 Wings 3.8–5 mm. long.  
 Wings obovate, mucronate, 5 mm. long, white with pale veins. 172. *P. Watsoni*.  
 Wings narrowly spatulate-obovate, obtuse, 3.8 mm. long, bluish- or purplish-veined, white-margined. 173. *P. caerulescens*.  
 Wings 2.5–3.5 mm. long.  
 Leaves linear or acicular; stems strigillose or incurved-puberulous.  
 Capsule oblong, about twice as long as wide.  
 Leaves strongly 2-sulcate beneath. 174. *P. scoparioides*.  
 Leaves not 2-sulcate beneath.  
 Capsule 2 mm. long; aril 1 mm. long. 175. *P. dolichocarpa*.  
 Capsule 2.7–3 mm. long; aril 1.5 mm. long. 176. *P. scoparia*.  
 Capsule suborbicular or oval, not twice as long as wide.  
 Wings about equaling capsule. 177. *P. michoacana*.  
 Wings distinctly exceeding capsule. 178. *P. Salviniana*.  
 Leaves obovate-spatulate; stems spreading-puberulous. 179. *P. viridis*.

I. *Phlebotaenia*. Trees; leaves coriaceous, closely and strongly veined; flowers large, in axillary racemes; sepals free, herbaceous, deciduous; wings petaloid, deciduous; capsule large, very broadly winged on one side, narrowly winged on the other, or sometimes broadly winged on both sides.

1. *Polygala cuneata* (Griseb.) Blake, Contr. Gray  
 Herb. 47: 9. 1916.

*Phlebotaenia cuneata* Griseb. Mem. Am. Acad. II. 8: 156. 1860.  
*Polygala Phlebotaenia* Chod. Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: 4. 1893.  
*Polygala cuneata typica* Blake, Contr. Gray Herb. 47: 9. 1916.

Tree up to 15 m. high, glabrous except for the densely puberulous raceme-axes, more or less glutinous; leaves cuneate to cuneate-oblong, 2.8–5 cm. long, 1–1.8 cm. wide, rounded, truncate, or retuse at apex, narrowed at base; petioles 3–6 mm. long; racemes 3–10-flowered, 8–18 mm. long; pedicels glabrous, 6–8 mm. long; flowers purplish; sepals oval, rounded, ciliate, the upper 5.5–6 mm., the lower 3.6–4 mm. long; wings oval, rounded or obscurely mucronulate, subsessile, short-ciliate, about 14 mm. long, about 8.5 mm. wide; keel bearing on each side at base of the saccate portion a rounded lobe half its length; disk thick; capsule oval,



glabrous, membranaceous-herbaceous, flat, with a very broad membranous wing on one side, narrowly winged on the other, 1.3–2.8 cm. long, 1.1–1.6 cm. wide, one cell sometimes abortive; seed 7 mm. long, densely pilosulous-velutinous; aril large.

TYPE LOCALITY: Mount Friendship, near Santa Catalina de Guantanamo, Cuba.

DISTRIBUTION: Cuba.

ILLUSTRATION: Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 1–4.

*Polygala cuneata obovata* (Griseb.) Blake, Contr. Gray Herb. 47: 9. 1916. *Phlebotaenia cuneata obovata* Griseb. Cat. Pl. Cub. 14. 1866. *Polygala Phlebotaenia obovata* Chod. Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: 5. 1893. Leaves cuneate-obovate, rounded or retuse at apex, 2.4–2.7 cm. long, 1.2–1.8 cm. wide. Loma de Rangel, near San Cristobal, Cuba. ILLUSTRATION: Contr. Gray Herb. 47: pl. 1, f. 1.

## 2. *Polygala Cowellii* (Britton) Blake, Contr. Gray Herb. 47: 10. 1916.

*Phlebotaenia Cowellii* Britton, Torreyia 7: 38. 1907.

*Phlebotaenia portoricensis* Urban, Symb. Ant. 5: 382. 1908.

Tree up to 10 m. high; branches sparsely appressed-pubescent, at length glabrate; leaves oblong to elliptic, 8–12.5 cm. long, 3.2–6.9 cm. wide, cuneate to rounded at each end, or abruptly pointed with obtuse apex, glabrous or with a few hairs along midvein; petioles 5–7 mm. long; racemes 2.5 cm. long, subsessile on leafless branches, 6–13-flowered, their axes like the pedicels (4–9 mm. long) densely spreading-puberulous; flowers purple; sepals broadly elliptic, rounded, purplish-green, ciliate, the upper 4 mm. long, the lower 2.5 mm. long; wings elliptic-obovate, obtuse, short-clawed, 14.5 mm. long, 9 mm. wide; keel with two rotund lateral folds, 14 mm. long; capsule suborbicular or semi-orbicular, 3.8 cm. long, 2.6–3.6 cm. wide, membranous, glabrous, very broadly winged on both cells or one wing sometimes greatly reduced, the wings many-nerved, somewhat reticulate, the seminiferous cells about 9 mm. long; one ovule usually abortive; seed obovoid, somewhat compressed, densely rufidulous-silky-pilose, 8 mm. long; aril none.

TYPE LOCALITY: Coamo Springs, Porto Rico.

DISTRIBUTION: Porto Rico.

ILLUSTRATION: Addisonia pl. 280.

II. *Badiera*. Evergreen shrubs or trees; leaves coriaceous, obscurely veined, more or less revolute; flowers in dense short umbelliform or spiciform or rarely loose axillary racemes; sepals free, subherbaceous, persistent or subpersistent; wings obliquely ovate, subherbaceous, little larger than the sepals, subpersistent or deciduous; upper petals arched, about twice as long as wings, adnate to staminal sheath; stigmatic lobes approximate, not tufted; capsule fleshy-coriaceous, usually stipitate; aril large, fleshy-coriaceous, glabrous.

## 3. *Polygala Penaea* L. Sp. Pl. 703. 1753.

*Polygala domingensis* Jacq. Sel. Stirp. Pict. 96. 1780.

*Badiera Penaea* DC. Prodr. 1: 335. 1824.

*Badiera domingensis* DC. Prodr. 1: 335. 1824.

Shrub or small tree, much branched; stem and branches densely hispidulous; leaves obovate, 1.8–3.2 cm. long, 7–15 mm. wide, rounded or obtuse at the mucronulate apex, acutely cuneate at base, rough both sides with short persistent tuberculate-based hairs; petioles 1–1.5 mm. long; racemes sessile, the axis 2.8 mm. long or less; bracts ovate-oval, broadly rounded, spinulose-ciliate, 0.5–0.6 mm. long; pedicels 1.5–2 mm. long; flowers greenish-yellow; sepals deltoid-ovate, rounded, 0.8–1 mm. long and wide; wings similar, 3-nerved, 1.3–1.4 mm. long, 1.1–1.3 mm. wide; upper petals oblong; keel ciliate more than one-half its length, 2.6–2.8 mm. long; capsule broadly cuneate or sometimes transversely oblong, lobed for about one-sixth its length or subtruncate, short-hispidulous, 4–5.5 mm. long, 7–9 mm. wide, on a stipe 1 mm. long; seed 4.2 mm. long, sparsely pubescent; aril casque-shaped, with distinct dorsal lobe, 2.2–2.7 mm. deep.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: Haiti and Santo Domingo, at an altitude of 500–1190 meters; southwestern Porto Rico; Virgin Gorda, British Virgin Islands.

ILLUSTRATIONS: Deless. Ic. 3: pl. 21; Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 9–11; Contr. Gray Herb. 47: pl. 1, f. 2.



4. *Polygala portoricensis* (Britton) Blake, Contr. Gray  
Herb. 47: 14. 1916.

*Badiera portoricensis* Britton, Bull. Torrey Club 42: 494. 1915.

Virgate tree 5–6 m. high; branchlets incurved-hispidulous; leaves obovate or elliptic-obovate, 1.5–3 cm. long, 5–16 mm. wide, emarginulate at the obtuse or rounded apex, cuneate at base, hispidulous-scabrous both sides; racemes sessile; pedicels sparsely hispidulous, 2–2.4 mm. long; flowers whitish; upper sepal ovate, subtruncate, 1.3 mm. long, the lower suborbicular-ovate, 1 mm. long; wings triangular-ovate, rounded, 1.8 mm. long, 1.5 mm. wide; upper petals obovate; keel sparsely puberulous on sides; capsule cuneate-quadrangle, broader than long, obscurely cordate at base, lobed for about one-sixth its length with broadly rounded lobes, ciliolate, in youth sparsely short-pubescent on sides, at maturity glabrous except for the ciliolate margin, 5.3–6 mm. long, 6.2–6.8 mm. wide, on a stipe 0.8–1 mm. long; seed black, short-pubescent, 4.8 mm. long; aril 1.8 mm. deep, lobulate, with obscure dorsal lobe.

TYPE LOCALITY: Serpentine slopes, Guanajibo, near Mayaguez, Porto Rico.

DISTRIBUTION: Western Porto Rico, from sea-level to 750 meters altitude.

5. *Polygala scabridula* Blake; Britton, Bull. Torrey  
Club 50: 39. 1923.

Virgate shrub 2–3 m. high; branches erect, hispidulous; leaves obovate, 1.3–1.8 cm. long, 9–12 mm. wide, broadly rounded at apex, rounded or cuneate-rounded at base, coriaceous, scabrid-hispidulous above with persistent ascending hairs, similarly pubescent beneath; racemes axillary, the axis 2-flowered, about 1 mm. long, the peduncle obsolescent; pedicels glabrous, 1.2 mm. long; flowers immature; sepals deltoid-ovate, ciliolate, obtuse, 1.1 mm. long; wings similar, 1.4 mm. long and wide; keel ciliate, otherwise subglabrous, 2.5 mm. long; capsule subquadrangle, rather broadly margined, slightly wider at the apex, ciliolate, otherwise glabrous, 6 mm. long, 8.5 mm. wide, lobed for about one-third its length; seed ellipsoid, sparsely pubescent, 4 mm. long; aril orange, 1.8 mm. deep, with repand lateral margin, the dorsal lobe 1 mm. long.

TYPE LOCALITY: Sabana de Motembo, Santa Clara, Cuba.

DISTRIBUTION: Known only from the type locality.

6. *Polygala guantanamana* Blake, Contr. Gray  
Herb. 47: 12. 1916.

*Badiera virgata* Britton, Bull. Torrey Club 37: 361. 1910. Not *Polygala virgata* Thunb. 1794.

Virgate shrub or tree, 4 m. high or less; branches densely leafy, hispidulous, glabrate; leaves oval or obovate, 6–19 mm. long, 3–9 mm. wide, emarginate or rounded at apex, rounded at base, often with fascicles of smaller ones in the axils, rather sparsely strigillose but smooth to the touch on both sides; racemes 3–4-flowered, the axis 1–1.5 mm. long; pedicels glabrous or strigillose, 1.6–2 mm. long; flowers yellowish-green; sepals ovate, obtuse, 1–1.1 mm. long; wings triangular-ovate, obtuse, 1.8 mm. long, 1.3 mm. wide; upper petals obovate; keel pubescent laterally, 3 mm. long; capsule oblate-quadrangle, not narrowed below, strongly margined, truncate-rounded at base, lobed for one-quarter to one-third its length with erectish rounded lobes, ciliate and sparsely pubescent when young, glabrous at maturity, 5.5–6.8 mm. long, 6.5–8 mm. wide; seed 4.8 mm. long; aril casque-shaped, crenate-lobulate, 2–2.2 mm. long.

TYPE LOCALITY: Coral rock bench, Guantánamo Bay, Cuba.

DISTRIBUTION: Oriente, Camaguey, and Santa Clara, Cuba.

7. *Polygala oblongata* (Britton) Blake, Contr. Gray  
Herb. 47: 13. 1916.

*Polygala diversifolia* Chod. Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: 10, in part. 1893. Not *P. diversifolia* L. 1753.

*Polygala diversifolia elliptica* Chod. Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: 11. 1893.

*Polygala diversifolia obovata* Chod. Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: 11. 1893.

*Badiera oblongata* Britton, Bull. N. Y. Bot. Gard. 5: 314. 1907.

*Badiera heterophylla* Britton, Bull. Torrey Club 42: 496. 1915. Not *Polygala heterophylla* Scheele, 1843.



*Badiera punctata* Britton, Bull. Torrey Club 42: 496. 1915. Not *Polygala punctata* A. W. Benn. 1879.

*Polygala punctifera* Blake, Contr. Gray Herb. 47: 13. 1916.

*Polygala dimorphophylla* Blake, Contr. Gray Herb. 47: 16. 1916.

Shrub 0.6–5 m. high; stem and branches densely puberulous or hirtellous; leaves elliptic, oblong-elliptic, obovate-oblong, or oval, rarely ovate-elliptic or narrowly ovate, 1.5–2.8 or rarely 5 cm. long, 6–22 mm. wide, emarginate at the rounded apex, rounded or cuneate at base, strigillose both sides but smooth to the touch; peduncles 1–2 mm. long; pedicels densely strigillose to sparsely hirtellous, 1.3–2.5 mm. long; flowers white or yellowish; sepals suborbicular or oblate-suborbicular, 0.8–1 mm. long, 1.2–1.5 mm. wide; wings deltoid-suborbicular, 1.4 mm. long, 1.6 mm. wide; upper petals with dilated apex; keel pubescent on sides near middle, 3.3 mm. long; capsule subquadrate or subcuneate-quadrate, sparsely strigillose and ciliolate, lobed for one-fourth its length or less, the lobes truncate-rounded, at base rounded or subcordate, 5–7.8 mm. long, 7–10.5 mm. wide, on a stipe 1–1.5 mm. long; seed 5.3 mm. long; aril crenate-lobulate, 2–2.5 mm. high.

TYPE LOCALITY: Coppice, north slope of Blue Hills, New Providence, Bahama Islands.

DISTRIBUTION: Bahama Islands; Oriente, Camaguey, and Santa Clara, Cuba.

8. *Polygala jamaicensis* Chod. Mém. Soc. Phys.  
Genève 31(2)<sup>2</sup>: 11. 1893.

*Badiera diversifolia* DC. Prodr. 1: 334. 1824. Not *Polygala diversifolia* L. 1753.

Shrub or small tree 2.5–6 m. high; stem and branches densely puberulous, at length glabrate; leaves ovate to ovate-lanceolate or oval-ovate, 3.5–8.5 cm. long, 1.3–3.7 cm. wide, usually and often abruptly narrowed to the obtuse often retuse apex, cuneate at base, sparsely and minutely strigillose both sides; petioles 3–9 mm. long; peduncles 1–1.5 mm. long; axis of racemes 3–6 mm. long; pedicels appressed-puberulous, 2–5 mm. long; sepals suborbicular- or deltoid-ovate, 1.2–1.5 mm. long and wide; wings deltoid-ovate, 1.8–2.2 mm. long and wide; upper petals obovate; keel densely appressed-pubescent laterally, 4.2 mm. long; capsule subquadrate, lobed for about one-fifth its length, with rounded lobes, sparsely ciliate, 6.5–10 mm. long, 7–11 mm. wide, on a stipe 2.5 mm. long; seed 6 mm. long; aril 3 mm. deep, somewhat trilobed.

TYPE LOCALITY: Rock Fort, Jamaica.

DISTRIBUTION: Jamaica, at altitudes of 1065 meters or less.

ILLUSTRATIONS: P. Br. Hist. Jam. pl. 5, f. 3; Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 14; Contr. Gray Herb. 47: pl. 1, f. 3.

9. *Polygala stipitata* Blake, Contr. Gray Herb. 47: 15. 1916.

*Badiera cubensis* Britton, Bull. Torrey Club 37: 362, in part. 1910. Not *Polygala cubensis* Chod. 1893.

Shrub 1–2 m. high; branches puberulous; leaves oval or suborbicular-oval to broadly obovate, 3.5–6 cm. long, 1.8–3.3 cm. wide, abruptly short-pointed with obtuse or emarginulate apex, cuneate at base, very sparsely strigillose or glabrous above, sparsely strigillose beneath; petioles 2 mm. long; raceme-axis 4–5 mm. long, the peduncle 1 mm. long or less; pedicels strigillose, 1–1.5 mm. long; flowers greenish; upper sepal oval, rounded, 1.3 mm. long; lower sepals deltoid-ovate, 1 mm. long; wings deltoid-ovate, 1.7 mm. long; upper petals pubescent within, 3 mm. long; keel pubescent laterally, 3.3–4 mm. long; capsule subquadrate, lobed for one-third to one-fifth its length with rounded lobes, narrowly margined, ciliolate, 7 mm. long, 8.5 mm. wide, on a stipe 1.5–2 mm. long; seed 6 mm. long; aril lobulate, 1.8 mm. long.

TYPE LOCALITY: Cuba.

DISTRIBUTION: Cuba.

ILLUSTRATION: Contr. Gray Herb. 47: pl. 1, f. 4.

10. *Polygala montana* (Britton) Blake, Contr. Gray  
Herb. 47: 16. 1916.

*Badiera montana* Britton, Bull. Torrey Club 37: 363. 1910.

Shrub 3 m. high or less; branchlets hirtellous; leaves broadly oval or oval-ovate, 2.6–5 cm. long, 1.8–3.3 cm. wide, usually emarginate at the rounded apex, rounded or broadly cuneate at



base, sparsely strigillose both sides but smooth to the touch; petioles 2–3 mm. long; peduncles 1.8 mm. long or less; pedicels strigillose, 1.5–2 mm. long; sepals orbicular-ovate, 1–1.2 mm. long; wings deltoid-ovate, obtuse, 1.8 mm. long, 1.5 mm. wide; keel pubescent near middle, 3.5 mm. long; capsule broadly cuneate, lobed for about one-fifth its length with rounded-truncate erectish lobes, sparsely short-strigose in youth, in age glabrate except near margin, narrowly winged, 8–10 mm. long, 12–13.5 mm. wide, cuneately decurrent into the stipe, this 1–2 mm. long; seed 6.5–7.5 mm. long; aril irregularly repand, 3–3.6 mm. high.

TYPE LOCALITY: Rocky wooded hill, at an altitude of about 700 meters, Arroyo Grande, Trinidad Mountains, Cuba.

DISTRIBUTION: Province of Santa Clara, Cuba.

### 11. *Polygala propinqua* (Britton) Blake, Contr. Gray Herb. 47: 16. 1916.

*Polygala diversifolia* Chod. Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: 10, in part. 1893. Not *P. diversifolia* L. 1753.

*Badiera cubensis* Britton, Bull. Torrey Club 37: 362, in part. 1910. Not *Polygala cubensis* Chod. 1893.

*Badiera propinqua* Britton, Bull. Torrey Club 42: 495. 1915.

*Polygala stipitata* Blake, Contr. Gray Herb. 47: 15, in part. 1916.

Much branched shrub or small tree, 2–5 m. high; branchlets strigillose or hirtellous; leaves oval or oval-ovate, 2.3–4.5 cm. long, 1.1–2.7 cm. wide, rounded or obtuse at apex, at base cuneate or rounded-cuneate, strigillose but smooth above, beneath minutely punctate-strigillose but smooth; petioles 1.5–3 mm. long; peduncles 1 mm. long; racemes few-flowered, the axis 1–3 mm. long; pedicels strigillose, 1.5–2.5 mm. long; flowers white; sepals broadly ovate, rounded, 1.2 mm. long; wings deltoid-ovate, 1.5 mm. long, 1.2 mm. wide; keel pubescent near middle, 3 mm. long; capsule transversely oblong, lobed for about one-third its length, the lobes divergent, at maturity sparsely pubescent or subglabrous, 7–7.5 mm. long, 9.5–11 mm. wide, on a stipe 2–2.5 mm. long; seed 5.3 mm. long; aril irregularly lobulate or merely sinuate, 3.2 mm. high.

TYPE LOCALITY: Los Palacios to San Juan de Zayas, Pinar del Rio, Cuba.

DISTRIBUTION: Pinar del Rio, Cuba, and Isle of Pines.

ILLUSTRATIONS: Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 13 (as *P. diversifolia*); Contr. Gray Herb. 47: pl. 1, f. 5.

### 12. *Polygala Fuertesii* (Urban) Blake, Contr. Gray Herb. 47: 17. 1916.

*Badiera Fuertesii* Urban, Symb. Ant. 7: 244. 1912.

Much branched tree; branchlets puberulent, more or less angulate; leaves oval to suborbicular, 3–4 cm. long, 1.9–2.9 cm. wide, obtuse, at base rounded to rounded-cuneate, above dark-green, shiny, reticulate, glabrous or sparsely strigillose, beneath paler green, dotted, sparsely strigillose or nearly glabrous; petioles puberulous, 4–5 mm. long; peduncles 3–6 mm. long; raceme-axis 4–8 mm. long, rather loosely flowered; pedicels strigillose, 1.5–2 mm. long; flowers 5–16, greenish, the petals whitish; sepals elliptic, rounded, more or less appressed-puberulous and ciliate, 1.3 mm. long; wings rhombic-suborbicular, 1.7 mm. long; keel 2.8 mm. long, densely pubescent laterally; fruit unknown.

TYPE LOCALITY: Summit of Mt. Noche Buena, Province Barahona, Santo Domingo.

DISTRIBUTION: Known only from the type locality.

III. *Microthrix*. Suffrutescent perennials; leaves small, mostly 5–20 mm. long, usually distinctly dimorphous, the lower shorter and broader, or uniform; flowers in terminal and axillary racemes; sepals free, usually deciduous; wings petaloid, usually deciduous; keel blunt, not beaked nor crested; stigmatic lobes approximate, sometimes tufted; capsule membranaceous-herbaceous, narrowly winged or margined.

### 13. *Polygala ovatifolia* A. Gray, Pl. Wright. 1: 39. 1852.

Suffrutescent at base, branched, erect, 3 dm. high or less, densely and softly spreading-pilose; leaves ovate or on the branches sometimes ovate-oblong, 1.2–3 cm. long, 0.6–1.3 cm.



wide, acutish, rarely obtuse, rounded or cuneate at base, short-pilose both sides with spreading hairs; petioles about 2 mm. long; racemes rather loose, 2–6.5 cm. long; sepals ovate-lanceolate, acute, 3 mm. long; wings oblong to oval, 4–5 mm. long, abruptly short-pointed, pilose, soon deciduous; capsule ciliate, orbicular, 8.5–9 mm. long; seed 4 mm. long; aril with rather broad lobed and lobulate scarious margin.

TYPE LOCALITY: Hills of the Rio Grande to Rio Frio, Texas, westward to the San Felipe.

DISTRIBUTION: Texas and New Mexico to Nuevo León.

ILLUSTRATIONS: Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 26–30; Contr. Gray Herb. 47: pl. 1, f. 6.

14. *Polygala buxifolia* H.B.K. Nov. Gen. & Sp. 5: 407. 1823.

*Polygala ovalifolia* DC. Prodr. 1: 331. 1824.

Suffrutescent below, much branched, the stems ascending, 2.8 dm. long or less, densely pubescent with short straight or curved spreading hairs; leaves elliptic or ovate, 1.3–1.9 cm. long, 7.5–12 mm. wide, obtuse or rounded, rarely acutish, pubescent with spreading or sometimes incurved hairs; wings obovate-oval, 5.5 mm. long, rounded at apex, short-pilose, subpersistent; keel 4–4.5 mm. long; capsule oval, densely pilosulous, 8 mm. long; aril with rather broad scarious margin and distinct short barely lobulate lateral and spreading dorsal lobes.

TYPE LOCALITY: Santa Rosa, Querétaro.

DISTRIBUTION: San Luis Potosí and Querétaro.

ILLUSTRATION: Contr. Gray Herb. 47: pl. 1, f. 7.

15. *Polygala myrtilloides* Willd. Sp. Pl. 3: 889. 1803.

Fruticulose below, many-stemmed, densely puberulous with subappressed hairs; leaves elliptic to oblong-oval or oval-ovate, 1.5–2 cm. long, 6–12 mm. wide, the uppermost sometimes oblong, retuse, obtuse, or acutish at apex, cuneate to rounded at base, subcoriaceous, reticulate below, rather densely pubescent both sides with short subappressed hairs; racemes loosely 4–8-flowered, 2 cm. long; sepals subpersistent, ovate-lanceolate to linear-lanceolate, acuminate, 4 mm. long; wings obovate-oval, 5.5–6.5 mm. long, 2.8–3.5 mm. wide, obtuse or rounded, incurved-puberulous; keel greenish, 4.5 mm. long; capsule oval, incurved-puberulous and ciliolate, 6.5–7 mm. long; seed 4 mm. long; aril broadly scarious-margined, 3-lobed, the lateral lobes oblong, oblique, somewhat dilated at apex, the dorsal short, horizontal.

TYPE LOCALITY: "South America" [Mexico].

DISTRIBUTION: San Luis Potosí and Hidalgo.

ILLUSTRATION: Contr. Gray Herb. 47: pl. 1, f. 8.

16. *Polygala Robinsonii* Blake, Contr. Gray  
Herb. 47: 20. 1916.

*Polygala puberula ovalis* Rob. & Greenm. Proc. Am. Acad. 29: 382. 1894. Not *P. ovalis* E. Meyer, 1843.

Perennial, scarcely suffrutescent, few-stemmed, 3–7 cm. high, appressed-puberulous; leaves few, elliptic or oval-oblong, 1.3–2.3 cm. long, 8–16 mm. wide, rounded or obtuse, thin, purplish beneath, densely appressed-puberulous; racemes few-flowered; sepals lanceolate, subpetaloid, magenta-tinted; wings oblong, 3.8 mm. long, obtuse, magenta, sparsely incurved-pilosulous; keel yellowish, 3 mm. long; capsule orbicular, incurved-pilosulous, 5 mm. long; aril minute, 0.5 mm. long, with obsolescent scarious margin and large pubescent umbo.

TYPE LOCALITY: Guadalajara, Jalisco.

DISTRIBUTION: Coahuila and Jalisco.

ILLUSTRATION: Contr. Gray Herb. 47: pl. 1, f. 9.

17. *Polygala Xanti* A. Gray, Proc. Am. Acad. 5: 153. 1861.

Suffrutescent below, the branches procumbent or erectish, 1–2 dm. long, densely pubescent with incurved hairs; leaves oval, 6–16 mm. long, 4–14 mm. wide, rounded at base and apex, densely pubescent with short incurved hairs; racemes 1.8–3 cm. long, rather loose; flowers white, tinged with yellow and purple; wings oval or somewhat rhombic-oval, 5.3–5.8 mm. long, 3.1–3.5 mm. wide, obtuse or rounded at apex, cuneate at base, venose, pilose with short incurved-



spreading hairs; keel pilose below, 5–5.3 mm. long; capsule elliptic-ovate, notched, at base rounded, densely pubescent, 7–8 mm. long, short-stiped; seed 4.3 mm. long; aril 1 mm. high, the pilose umbo 0.5 mm. high, the scarious slightly repand margin very shortly upturned at the dorsal apex.

TYPE LOCALITY: Cape San Lucas, Lower California.

DISTRIBUTION: Southern Lower California.

ILLUSTRATION: *Mém. Soc. Phys. Genève* 31(2)<sup>2</sup>: *pl. 15, f. 43–45*.

18. *Polygala serpens* Blake, *Contr. Gray*  
Herb. 47: 21. 1916.

Suffruticulose, many-stemmed, procumbent, 8–30 cm. long, incurved-puberulous; leaves ovate, 1.5–2.8 cm. long, 8–13 mm. wide, acuminate, at base rounded, thin, incurved-spreading-pubescent; racemes loosely 5–12-flowered, 2–2.5 cm. long; flowers apparently ochroleucous; sepals lanceolate, acuminate, 2.6 mm. long; wings elliptic, 5.5–7 mm. long, 4 mm. wide, obtuse or rounded, at base broadly cuneate, sparsely puberulous along costa; keel glabrous, 4.5–4.8 mm. long; capsule deltoid-ovate, narrowed above, truncate-rounded at base, ciliate and spreading-puberulous, 5.5–7 mm. long; seed short-pilose, 4 mm. long; aril minute, capitelliform, pilose, 0.5 mm. high, the scarious margin obsolete.

TYPE LOCALITY: Acapulco, Guerrero.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: *Contr. Gray Herb.* 47: *pl. 1, f. 10*.

19. *Polygala Pavoni* Chod. *Mém. Soc. Phys.*  
*Genève* 31(2)<sup>2</sup>: 14. 1893.

Undershrub; stems puberulous, ascending, 1–2 dm. long; leaves elliptic or elliptic-ovate; 20 mm. long, 12 mm. wide, obtuse, "irregular and diverse," puberulous; racemes few-flowered; flowers 5–6 mm. long; sepals lance-linear, acute, pubescent; wings elliptic, subsessile, obtuse, glabrous, reticulate-veined; upper petals dilated at apex, subacute, scarcely shorter than keel, staminal tube and free portion of filaments long-pilose; ovary elliptic, ciliate; fruit and seed unknown.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Known only from the type locality.

20. *Polygala Magdalena* Brand. *Univ. Calif. Publ.*  
*Bot.* 4: 182. 1911.

Stems prostrate to erect, 1–3 dm. long, incurved-griseous-puberulous; lowest leaves oval-oblong, 7 mm. long, the middle and upper oblong or oblong-ovate to linear, 0.8–2 cm. long, 2–8 mm. wide, rounded or retuse to acutish, rather densely incurved-puberulous, not reticulate; racemes loose, 4–10.5 cm. long; flowers apparently ochroleucous; sepals lanceolate, acute, 2 mm. long; wings narrowly obovate-oval, 4.5 mm. long, 2.8 mm. wide, obtuse, puberulous above; keel 3.5–4 mm. long; capsule oval, appressed-puberulous, 7.5–9.5 mm. long; seed 4 mm. long; aril minute, 0.7 mm. high, with pubescent umbo and very narrow barely crenate margin.

TYPE LOCALITY: Magdalena Island, Lower California.

DISTRIBUTION: Lower California.

21. *Polygala piliophora* Blake, *sp. nov.*

Stems several, suffrutescent below, about 1 dm. high, densely and subcanescently incurved-puberulous; lower leaves oblanceolate, the middle and upper linear-lanceolate or linear-elliptic, 9–17 mm. long, 1.8–2.8 mm. wide, acute to acuminate at each end, densely incurved-puberulous, thickish, 1-nerved, involute; peduncles very short; racemes loose below, dense above, the axis 3.2–5 cm. long; pedicels 1.5–2 mm. long; flowers apparently ochroleucous; sepals ovate, obtuse or acute, 2.2–2.5 mm. long; wings oval or obovate, 4–4.2 mm. long, 2–2.8 mm. wide, obtuse to rounded, cuneate at base, somewhat vesicle-bearing, incurved-puberulous chiefly



along costa and toward apex, incurved-ciliolate; keel glabrous, 3–5 mm. long; capsule ovate-oval, somewhat narrowed above, emarginate, rounded at base, incurved-puberulous and -ciliolate, 5.8–8.5 mm. long; seed short-pointed at base, pilose, 4.3 mm. long; aril pedicellate by the pointed base of seed, 0.4–0.5 mm. high, 1.3 mm. long dorsally, obcuneate-lanceolate as seen from above, nearly horizontal, subentire, the densely pilose umbo about 0.3 mm. high, the anterior portion of the scarious margin subtruncate, vizer-like, the posterior portion shorter, narrower, acutish.

Type collected near Fort Huachuca, Arizona, August, 1894, *T. E. Wilcox* (U. S. Nat. Herb. no. 213259).

22. *Polygala leptosperma* Chod. Mém. Soc. Phys.  
Genève 31(2)<sup>2</sup>: 17. 1893.

Suffrutescent at base, 12 cm. long, hirsute-tomentose above; leaves lanceolate to lance-linear, 1.5–2.2 cm. long, 7–9 mm. wide, acute, subtomentose-velutinous; flowers 6–7 mm. long; sepals lance-linear-subulate, setose-ciliate; wings elliptic-lanceolate, subacute, subunguiculate, equaling keel, long-ciliate on margin and back; filaments pilose; capsule ovate-cuneate, broadest above base, narrowed gradually toward apex, hispid, deeply emarginate; aril small, capiteliform, the very narrow scarious crenate margin with very short upturned dorsal lobe and no lateral lobes.

TYPE LOCALITY: Oaxaca (state).

DISTRIBUTION: Oaxaca.

ILLUSTRATION: Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 19–22.

23. *Polygala Barbeyana* Chod. Mém. Soc. Phys.  
Genève 31(2)<sup>2</sup>: 16. 1893.

Stems several, fruticulose below, up to 4 dm. high, densely incurved-pubescent or at length subglabrate; leaves reduced, the lowest oblong, 5 mm. long, the middle and upper subsquamiform, linear or linear-lanceolate, 5–10 mm. long, 1–1.5 mm. wide, subsessile; racemes loose, 1.7–11 cm. long; wings obovate-oval or suborbicular-oval, 3.5–4.5 mm. long, 2.5–3 mm. wide, acutish, pubescent along middle and toward apex, ciliate; capsule oval, rarely oval-oblong, slightly narrowed at base, ciliate, 5–7 mm. long; seed sericeous, 3 mm. long; aril small, about 0.7 mm. high, cap-shaped, subpedicellate by the pointed base of seed, with narrow not lobed scarious margin and more or less distinct but short dorsal lobe.

TYPE LOCALITY: San Luis Potosí (state).

DISTRIBUTION: Arizona to Coahuila and San Luis Potosí.

ILLUSTRATIONS: Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 15–18; Contr. Gray Herb. 47: pl. 1, f. 11.

24. *Polygala zacatecana* Blake, Contr. Gray  
Herb. 47: 26. 1916.

Several-stemmed, suffruticulose below, 1–1.3 dm. high, incurved-griseous-puberulous; leaves reduced, the lower oblong or oval, 4–5 mm. long, the upper linear-lanceolate, 4.5–10 mm. long, 0.8–1 mm. wide, puberulous, involute; racemes loose, 2–5 cm. long; sepals lanceolate, acuminate; wings oval-obovate, 4 mm. long, 2.8 mm. wide, rounded, sparsely pubescent at apex and along midline; keel 4.5–5 mm. long; capsule oval, slightly broader at the base, ciliolate, 5.5 mm. long; seed 5 mm. long; aril very small, very sparsely pubescent with subglabrous umbo, the very narrow scarious margin entire.

TYPE LOCALITY: Near Concepcion del Oro, Zacatecas.

DISTRIBUTION: Known only from the type locality.

25. *Polygala intricata* Blake, Contr. Gray  
Herb. 47: 26. 1916.

Stems about 1 dm. long, branching, flexuous, ascending, densely and canescently incurved-puberulous; lowest leaves oblong, 3 mm. long, the middle and upper linear or linear-lanceolate, 11–14 mm. long, 1.5–2.5 mm. wide, subsessile, incurved-puberulous; racemes flexuous, 9–12-flowered; sepals ovate-oblong to lanceolate, 2.5 mm. long; wings obovate, 3.5–4 mm. long,



1.8 mm. wide, rounded, ciliolate, at base sparsely incurved-puberulous; keel glabrous, purplish, 4–4.2 mm. long; capsule oval, ciliolate, 5.7–6.5 mm. long; seed subsericeous-pilose, 4 mm. long; aril 0.7–0.8 mm. high, the corneous umbo about 0.5 mm. high, densely spreading-pilose, the narrow scarious margin subentire, the dorsal lobe lacking.

TYPE LOCALITY: Saltillo, Coahuila.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 13*.

26. *Polygala Palmeri* S. Wats. Proc. Am.  
Acad. 17: 325. 1882.

Stems several, 1.2–1.8 dm. high, densely and subcanescently pubescent with spreading-incurved hairs; leaves from oval below to oblong or obovate-oblong, the middle and upper 15–16 mm. long, 4.5–7 mm. wide, obtuse or truncate, mucronate, cuneate at base, thick, incurved-spreading-pubescent; racemes 3.5–4.5 cm. long, canescently pubescent, 6–11-flowered; flowers pale greenish-yellow and purplish; wings obovate, 5.7–6 mm. long, 2.8 mm. wide, acutish, pubescent nearly all over with spreading-incurved hairs; keel equaling wings; capsule oval-ovate, somewhat narrowed above, rounded at base, ciliolate, 10 mm. long; seed 6 mm. long; aril 1.5 mm. deep, with spreading-pilose umbo and much narrower subentire scarious margin extended into short anterior and dorsal subhorizontal lobes.

TYPE LOCALITY: Juarez, Coahuila.

DISTRIBUTION: Extreme western Texas and Coahuila.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 15*.

27. *Polygala racemosa* Blake, Contr. Gray  
Herb. 47: 28. 1916.

Several-stemmed, fruticulose below, 2.5–3.5 dm. high, densely incurved-puberulous but green; lower leaves strongly reduced, the middle and upper linear, 1.5–3.1 cm. long, 1.5–3 mm. wide, acute, incurved-puberulous; racemes 16–21-flowered, 7–13 cm. long; flowers apparently greenish; sepals lanceolate, subacuminate, 2–2.3 mm. long; wings oval-obovate, 4.5–4.8 mm. long, 2.9 mm. wide, rounded, ciliolate, puberulous with incurved-spreading hairs below and toward apex; keel 4.5–4.8 mm. long; capsule oval, rounded at base, substipitate, ciliolate, 7–9.5 mm. long; seed 4.5 mm. long; aril 0.7–1 mm. high, the umbo pilosulous, the somewhat narrower scarious margin lobulate, the dorsal lobe very short, the lateral obsolete.

TYPE LOCALITY: Santa Eulalia Mountains, Chihuahua.

DISTRIBUTION: Southern Arizona and Chihuahua.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 16*.

28. *Polygala rectipilis* Blake, Contr. Gray  
Herb. 47: 27. 1916.

Several-stemmed, fruticulose below, erect, about 2 dm. high, densely and shortly spreading-pilose with straight hairs; lower leaves oblong or oblong-oval, 8–14 mm. long, the middle and upper linear, 12–22 mm. long, 1.7–2.6 mm. wide, shortly spreading-pilose; racemes flexuous, 4–18-flowered, 4–10 cm. long; flowers purplish; sepals lanceolate, 2 mm. long; wings obovate-oval, 4.5 mm. long, 2.8 mm. wide, subacute, short-unguiculate, ciliolate and along costa pilosulous with spreading hairs; keel purple with yellow apex, 4.8–5.3 mm. long; capsule oval, spreading-ciliate, 7.5–8 mm. long; seed 4 mm. long; aril 1 mm. high, the umbo pilosulous, the narrower scarious margin scarcely lobed.

TYPE LOCALITY: Limestone hills south of Hillsboro, Sierra County, New Mexico, at an altitude of 1065 meters.

DISTRIBUTION: New Mexico and Coahuila.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 14*.

29. *Polygala reducta* Blake, Contr. Gray  
Herb. 47: 25. 1916.

*Polygala scopulorum* Brand. Univ. Calif. Publ. Bot. 6: 364. 1917.

Several-stemmed, suffruticulose below, 1.7 dm. high or less, incurved-puberulous, rarely nearly or quite glabrous; lower leaves narrowly oval-oblong, 5–9 mm. long, the middle and



upper linear-lanceolate or linear, 5–23 mm. long, 0.5–2 mm. wide, sessile, involute, incurved-puberulous; racemes very loose, 6–9 cm. long; sepals lanceolate, acute; wings elliptic-obovate, 4.5–5 mm. long, 3–4 mm. wide, obtuse, rarely apiculate, abruptly contracted at base, sparsely pubescent; capsule oval, ciliolate, 8–9.5 mm. long; seed 4.5–5 mm. long; aril 1 mm. high, the dorsal lobe spreading, 1.5 mm. long, the lateral lobes short, subentire, slightly deeper than the umbo.

TYPE LOCALITY: San Luis Potosí (state).

DISTRIBUTION: Coahuila to San Luis Potosí.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 12.*

30. *Polygala longa* Blake, Contr. Gray  
Herb. 47: 29. 1916.

*Polygala tenuiloba* Blake, Contr. Gray Herb. 47: 36. 1916.

Several-stemmed, suffruticulose below, 1.3–4.5 dm. high, densely incurved-griseous-puberulous; lower leaves oblong or oblong-oval, 0.8–1.7 cm. long, the middle and upper oblong-lanceolate or -linear, 1.7–3.6 cm. long, 1.5–4 mm. wide, acute or acuminate, sometimes obtuse, griseous-puberulous; racemes loose, 2–10.5 cm. long; flowers purplish; sepals lanceolate, pubescent, 2.2–3.5 mm. long; wings oval or suborbicular, 3.5–5.5 mm. long, 2.4–4 mm. wide, rounded, rather sparsely pubescent; keel 4–5.7 mm. long; capsule oval, ciliolate, 7–8 mm. long; seed 4–4.5 mm. long; aril 1 mm. high, the dorsal margin 1.5 mm. long, the umbo 0.4 mm. high, pilose, the scarious margin strongly lobulate, with subdistinct or distinct dorsal and shorter lateral lobes.

TYPE LOCALITY: On the Pecos River, Texas.

DISTRIBUTION: Texas, Arizona, and Chihuahua.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 17.*

31. *Polygala neurocarpa* Brand. Univ. Calif. Publ.  
Bot. 6: 364. 1917.

Stems several, suffrutescent below, about 3 dm. long, in youth sparsely short-pubescent with spreading straight hairs, in age glabrate except in the axils; leaves linear to linear-oblong, 0.9–2.5 cm. long, 1–4 mm. wide, short-pointed or acuminate, thickish, in youth sparsely spreading-ciliate, soon glabrate; peduncles glabrous, 8–15 mm. long; racemes loose, 3.5–7.5 cm. long; pedicels glabrous, 3–4 mm. long; flowers purplish-tinged; sepals elliptic-ovate, subacuminate, ciliate, 2.8–3.3 mm. long; wings oval, 5.2 mm. long, 3.5 mm. wide, obscurely short-pointed, cuneate at base, ciliate, sparsely puberulous at base; keel 5 mm. long; capsule oval, short-ciliate, 8–9.8 mm. long; aril 1–1.2 mm. high, 1.4 mm. long dorsally, the rounded spreading-pilose umbo 0.5 mm. deep, the slightly wider scarious margin repand or lobulate, not distinctly lobed, the dorsal margin descending at an angle of 20–45°.

TYPE LOCALITY: Rocky slopes, Ixmiquilpan, Hidalgo.

DISTRIBUTION: Known only from the type locality.

32. *Polygala oophylla* Blake, Contr. Gray  
Herb. 47: 33. 1916.

Stems few, suffruticulose below, about 2 dm. high, densely pubescent with incurved-spreading hairs; lowest leaves elliptic or obovate-elliptic, 4 mm. long, the middle and upper ovate, 11–22 mm. long, 3.5–10 mm. wide, acute or subacute, mucronate, rounded at base, incurved-pubescent; racemes 9–30-flowered, 4–7 cm. long; sepals oblong-ovate, acute; flowers purplish; wings orbicular-oval, 6–6.5 mm. long, 4–4.8 mm. wide, rounded, pubescent all over or only at apex; keel equaling wings; capsule sparsely incurved-pubescent when young, ciliate at maturity, oval, 6.5–7 mm. long; seed 4.5 mm. long; aril 1.6 mm. high, 2 mm. long on the dorsal margin, the umbo pilosulous, 0.5 mm. high, the scarious margin 1.1 mm. high, irregularly lobulate, not distinctly lobed.

TYPE LOCALITY: Tlacuilotepec, Puebla.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 22.*



33. *Polygala brachyanthema* Blake, Contr. Gray  
Herb. 47: 33. 1916.

Several-stemmed, fruticulose below, 1.7–3.3 dm. high, green, incurved-pubescent; lowest leaves obovate, 3–7 mm. long, the middle and upper oblong-elliptic, 1–1.5 cm. long, 3–4.8 mm. wide, subobtusate, strongly mucronate, cuneate at base, sparsely incurved-pubescent; racemes 12–22-flowered, 5–8.5 cm. long; flowers purplish and greenish; sepals lance-ovate, acuminate, 2.5–3 mm. long; wings oval, 4.5–5 mm. long, 2.3–2.5 mm. wide, obtuse or subacute, greenish, ciliolate and pilosulous; keel glabrous, purplish except for the yellowish apex; capsule oval, ciliolate, 7–7.5 mm. long; aril 1 mm. high, 1.6 mm. long on the dorsal margin, the umbo pilosulous, 0.5 mm. high, the scarious margin irregularly crenulate-lobulate, produced into a short horizontal dorsal lobe.

TYPE LOCALITY: Minas de San Rafael, San Luis Potosí.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 21*.

34. *Polygala Brandegeana* Chod. Bot.  
Jahrb. 52: Beibl. 115: 72. 1914.

Many-stemmed, erectish, 7–9 cm. high, pubescent with incurved-ascending hairs; lower leaves much reduced, obovate, 3 mm. long, the middle and upper oblong to oval or oblong-linear, 6–10 mm. long, 1.5–4.5 mm. wide, thickish, subglabrous but lepidote above, sparsely incurved-pubescent beneath; racemes very short, pseudo-lateral, 1–3-flowered; flowers greenish and purplish; sepals lanceolate to ovate-lanceolate, acuminate, the upper subsistent; wings oval, 4.5 mm. long, 2.5–2.8 mm. wide, rounded, ciliolate above, sparsely incurved-pubescent along costa; keel greenish-yellow, glabrous, 4 mm. long; capsule oval, merely ciliate at maturity, 7.5–8.5 mm. long; seed 4 mm. long; aril 1.5 mm. deep, 2.3 mm. long on the dorsal margin, the umbo 0.6 mm. deep, the scarious margin irregularly lobulate, with indistinct lateral lobes and distinct dorsal lobe descending at an angle of about 45°.

TYPE LOCALITY: Dry places, El Riego, Tehuacan, Puebla.

DISTRIBUTION: Hidalgo and Puebla.

ILLUSTRATION: Contr. Gray Herb. 47: *pl. 1, f. 23*.

35. *Polygala orthotricha* Blake, Contr. Gray  
Herb. 47: 31. 1916.

Several-stemmed, fruticulose below, 1.5–2 dm. high, densely pilosulous with short straight spreading hairs; lower leaves oval to oblong-oval, 5–11 mm. long, the middle and upper oblong, lanceolate, or linear, 1.7–3.5 cm. long, 2–6 mm. wide, acute at each end, spreading-pubescent and ciliate; racemes loose, few-flowered, 2–4.5 cm. long; flowers violet; sepals lanceolate, acuminate, sparsely spreading-pilosulous; wings oval, 4.8–5 mm. long, 3 mm. wide, short-clawed, ciliolate, sparsely puberulous toward middle; capsule oblong-oval, ciliolate and sparsely spreading-puberulous, 10 mm. long; seed 4.7 mm. long; aril 2.4 mm. high, cloak-like, the broad scarious margin lobulate, not distinctly lobed.

TYPE LOCALITY: Foothills of the Santa Rita Mountains, Arizona.

DISTRIBUTION: Known only from the type locality.

36. *Polygala retifolia* Blake, Contr. Gray  
Herb. 47: 29. 1916.

Stems two or three, fruticulose below, about 4 dm. high, densely pubescent with short incurved and longer straight wide-spreading hairs; lowest leaves strongly reduced, 4–11 mm. long, the middle and upper linear or linear-lanceolate, 2.6–4 cm. long, 1.8–4 mm. wide, acuminate, mucronulate, thick, reticulate-venose, pubescent like the stem; racemes 20–30-flowered, 8–14 cm. long; flowers apparently greenish; sepals ovate or ovate-lanceolate, 2.5 mm. long; wings obovate-oval, 5–6 mm. long, 3–3.3 mm. wide, rounded at apex, scarcely clawed, sparsely ciliate, along costa and on margin pubescent with ascending hairs; keel glabrous, equaling wings; ovary densely pilose; fruit and seed unknown.

TYPE LOCALITY: Rio Blanco, Jalisco.

DISTRIBUTION: Known only from the type locality.



37. *Polygala amphothrix* Blake, Contr. Gray  
Herb. 47: 39. 1916.

Stems few, 1–1.5 dm. high, densely pubescent with short incurved and numerous longer straight wide-spreading hairs; lowest leaves strongly reduced, oval or oval-oblong, 3.5–11.5 mm. long, the middle and upper oblong-lanceolate or oval, 1.5–3.6 cm. long, 4.5–16 mm. wide, obtuse or subacute, at base cuneate, reticulate, pubescent like the stem; racemes 4–7.5 cm. long; flowers purplish; sepals ovate-lanceolate, acuminate; wings oval, 5–5.5 mm. long, 3–3.5 mm. wide, rounded at apex, broadly cuneate at base, ciliolate, sparsely puberulous along costa; keel greenish-yellow, equaling wings; ovary densely pilosulous; fruit and seed unknown.

TYPE LOCALITY: Otinapa, Durango.

DISTRIBUTION: Durango and Tepic.

38. *Polygala obscura* Benth. Pl. Hartw. 58. 1840.

*Polygala puberula* A. Gray, Pl. Wright. 1: 40. 1852.

*Polygala neo-mexicana* Wooton & Standley, Contr. U. S. Nat. Herb. 16: 144. 1913.

*Polygala obscura genuina* Blake, Contr. Gray Herb. 47: 30. 1916.

*Polygala vagans* Brand. Univ. Calif. Publ. Bot. 6: 365. 1917.

*Polygala laeta* Brand. Univ. Calif. Publ. Bot. 6: 366. 1917.

?*Polygala obscura matrophylla* Chod.; Loesener, Verh. Bot. Ver. Prov. Brand. 58: 148. 1917.

Many-stemmed, suffruticulose below, 1.2–3.8 dm. high, grayish-puberulous with incurved or rarely slightly spreading hairs; lower leaves oblong or oval-oblong, 1.2–2.8 cm. long, 4–7 mm. wide, the middle and upper oblong or oval-ovate to lanceolate or linear, 1.8–4.2 cm. long, 1.5–12 mm. wide, obtuse to acuminate, puberulous; racemes loose, 3.3–9 cm. long; flowers purplish; sepals lanceolate, acute; wings oval-obovate or elliptic, 4.5–5.8 mm. long, 2–3.5 mm. wide, rounded, sparsely pubescent along middle and toward apex; keel nearly glabrous, 4.8–5 mm. long; capsule oval, when young usually densely puberulous, in age glabrate and ciliate, or more or less puberulous on sides, 8–9 mm. long; seed 4–4.8 mm. high; aril 1.3–3 mm. long, veil-like, appressed, with broad irregularly lobulate scarious margin and pubescent umbo, but without distinct lateral and dorsal lobes.

TYPE LOCALITY: Hacienda del Carmen, Oaxaca.

DISTRIBUTION: Texas and Arizona to Oaxaca.

ILLUSTRATIONS: Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: pl. 13, f. 31–32; Contr. Gray Herb. 47: pl. 1, f. 18.

*Polygala obscura euryptera* Blake, Contr. Gray Herb. 47: 31. 1916. Wings 6–6.5 mm. long, 4–4.5 mm. wide; keel 6–6.5 mm. long; capsule 10 mm. long, 8 mm. wide. Oaxaca. ILLUSTRATION: Contr. Gray Herb. 47: pl. 1, f. 19.

39. *Polygala Lozani* Rose, Contr. U. S. Nat.  
Herb. 13: 307. 1911.

*Polygala calcicola* Rose, Contr. U. S. Nat. Herb. 10: 122. 1906. Not *P. calcicola* Chod. 1893.

Several-stemmed, fruticulose below, about 1 dm. high, curved-ascending, subcanescent with dense incurved hairs; lower leaves oval, rounded, 11 mm. long, the upper oblong or linear-oblong, 1–1.3 cm. long, 1.8–3.5 mm. wide, acutish, incurved-pubescent; racemes short, 3–4-flowered; flowers yellowish-green; sepals lanceolate, acuminate, the upper subpersistent; wings oval, 5–5.5 mm. long, 2.3–3.5 mm. wide, abruptly acute, cuneate at base, subpersistent, sparsely incurved-puberulous at apex; capsule oval, ciliolate, on the sides sparsely pubescent or glabrous, 7.5–9 mm. long; seed 4.5 mm. long; aril 1.7 mm. high, the umbo about 0.7 mm. high, the appressed scarious margin irregularly lobulate, the dorsal lobe barely indicated.

TYPE LOCALITY: La Cañada, near Tehuacán, Puebla.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 10: pl. 37; Contr. Gray Herb. 47: pl. 1, f. 20.

40. *Polygala parrasana* Brand. Univ. Calif. Publ.  
Bot. 6: 365. 1917.

Stems several, fruticulose below, procumbent, 4–10 cm. long, densely ascending-pubescent; leaves oval or elliptic-oblong, 3–9 mm. long, 2.5–4 mm. wide, apiculate to obtuse, cuneate at base, rather crowded, thickish, with the 2–3 pairs of lateral veins prominent beneath, pubescent



both sides; racemes loose, 3-7-flowered, 1.3 cm. long or less; flowers greenish in drying; sepals lance-elliptic, subacuminate; wings oval, 5.2 mm. long, 3.8 mm. wide, very obtuse, ciliate and rather sparsely pubescent; keel glabrous, 5.8 mm. long; submature capsule oval, ciliate and pubescent with spreading straightish hairs, 6.8 mm. long; aril 1.3 mm. high, 1.7 mm. long on the dorsal margin, the pilosulous umbo 0.4 mm. high, the scarious margin 3-lobed, the lateral lobes ovate, vertical, appressed, the dorsal subequal, descending at an angle of about 45°.

TYPE LOCALITY: Sierra de Parras, Coahuila.

DISTRIBUTION: Known only from the type locality.

#### 41. *Polygala annectens* Blake, sp. nov.

Stems several, fruticulose below, erectish, 1.3-2.7 dm. high, rather densely pubescent with incurved hairs; leaves ovate or elliptic-ovate, 1-3 cm. long, 6-10 mm. wide, obtuse to rounded, at base cuneate or rounded, dark-green above, evenly and rather densely incurved-pubescent, beneath paler green, similarly pubescent; racemes rather loose, 3.5 cm. long or less; sepals elliptic-ovate, acute, 2.5-3 mm. long; wings purplish, broadly oval, 5.6-5.8 mm. long, 4-4.6 mm. wide, rounded, cuneate at base, incurved-pubescent on costa and on sides especially toward apex, short-ciliate essentially throughout; keel greenish toward tip, glabrous, 6.6 mm. long; staminal tube and filaments glabrous; capsule broadly oval, short-ciliate, incurved-pubescent, 6-9 mm. long; seed pilose, 4.5 mm. long; aril 2-2.2 mm. high, 2.8-2.9 mm. long on the dorsal margin, the crustaceous umbo and the dorsal region pilose, the broad scarious margin 3-lobed and lobulate, the lateral lobes descending, the dorsal slightly deflexed from the horizontal.

Type collected near Tehuacán, Puebla, Mexico, August 30-September 8, 1905, *J. N. Rose*, *J. H. Painter* & *J. S. Rose 9897* (U. S. Nat. Herb. no. 453390).

#### 42. *Polygala russelliana* Blake, sp. nov.

Stems several, suffruticulose below, 2.5 dm. high, rather densely incurved-pubescent; leaves elliptic to lance-elliptic, 1.8-4 cm. long, 5-10 mm. wide, acute to acuminate at each end, rather densely incurved-pubescent; racemes rather loose, 1.5-5.7 cm. long; flowers ochroleucous in dried material; sepals lance-ovate, acuminate, 2.8 mm. long; wings elliptic, 5-5.8 mm. long, 2.5-3.2 mm. wide, slightly oblique, rounded or slightly apiculate at apex, cuneate at base, ciliate, sparsely incurved-pubescent; keel glabrous, 5-5.6 mm. long; staminal tube and filaments glabrous; capsule ovate-oval, distinctly narrowed toward the narrowly winged apex, incurved-puberulous, 7-7.5 mm. long; seed 4.5 mm. long; aril 1.2 mm. high, the umbo pilose, the deeper scarious margin 3-lobed, the lobes oblong or deltoid, obtuse, obscurely crenate, the lateral nearly vertical, the slightly longer dorsal descending at an angle of 30-60°.

Type collected near Puerta de Ixtla, Morelos, Mexico, July 4, 1901, *J. N. Rose* & *R. Hay 5335* (U. S. Nat. Herb. no. 395092). (Named in honor of Paul George Russell, a later collector of the species.)

DISTRIBUTION: Sonora and Morelos.

#### 43. *Polygala compacta* Rose, Contr. U. S. Nat. Herb. 8: 315. 1905.

*Polygala pubescens* A. Gray; Chod. Mém. Soc. Phys. Genève 31(2)<sup>2</sup>: 21. 1893. Not *P. pubescens* Mart. 1815.

Many-stemmed, ascending or erect, usually densely leafy, 1-2 dm. high, incurved-griseous-puberulous; lower leaves obovate to oval or oval-oblong, 5-17 mm. long, the middle and upper oblong or lance-oblong, 1.1-1.9 cm. long, 3-5 mm. wide, obtuse to acutish, incurved-puberulous; racemes rather dense, 1.5-4 cm. long; flowers apparently ochroleucous; sepals lanceolate, pilosulous; wings oval or obovate-oval, 3.5-5 mm. long, 2-2.5 mm. wide, obtuse or abruptly short-pointed, puberulous; capsule suborbicular to oval, incurved-puberulous, 7-9.5 mm. long; seed 3.5-4.5 mm. long; aril 1-2 mm. high, strongly 3-lobed, the lobes scarious, linear or linear-lanceolate, entire or slightly lobulate, descending or the dorsal more or less spreading, subequal or the dorsal somewhat the longer.

TYPE LOCALITY: Lava fields at an altitude of 2290 meters, Valley of Mexico, Federal District, Mexico.