

A KEY TO THE NATIVE AND NATURALIZED CLIMBING PLANTS OF OHIO BASED UPON VEGETATIVE CHARACTERS¹

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The first attempt to bring together a list of Ohio climbing plants is that of Dufour (1902) in which 77 species and varieties are cited. Since that time this group of plants has received no particular attention excepting the woody vines included in the keys of Schaffner (1928).

The present key brings together those climbing plants now known in the state and makes available their determination. Included are 100 species and varieties (the species of *Cuscuta* are not separated). The increase in number of taxa included reflects 1) the increase in our flora due to escapes, and 2) recognition of varieties by taxonomists.

Included are species and varieties, specimens of which are on deposit in the Herbarium of The Ohio State University, and in addition some species reported for Ohio in other collections. Excluded are most of the hundreds of species, varieties, and forms commonly planted but not known to have escaped and become a part of our flora. Certain exceptions to the above statement exist. *Cardiospermum halicacabum*, for example, is stated by Fernald (1950) to be an escape in our area although the only specimen in the O.S.U. Herbarium is one which persisted after cultivation in Highland County. Excluded also are taxa such as certain species of *Rosa* and *Galium* which, if reclining against upright objects, may extend several feet in height because of recurved thorns or bristles.

Several sources have been of aid in preparation of the key. Many descriptions and key characters are from the manuals of Schaffner (1928), Fernald (1950), and Gleason (1953). The *Vitis* key is derived essentially from that of Blackburn (1952). Nomenclature is essentially that of Fernald (1950).

Previously published keys to climbing plants are those of Newhall (1897), and Pepon (1927). These keys employ reproductive as well as vegetative characteristics. Jennings (1907) included only commonly planted woody forms. The key constructed by Curtis in Hottes (1924, 1949) includes many horticultural taxa and like the present one is based upon vegetative characters. In general, if flowers are available, the standard regional manuals are as well employed.

KEY

1. Plant woody or somewhat so. 2.
1. Plant herbaceous. 47.
 2. Leaves opposite or whorled. 3.
 2. Leaves alternate. 19.
3. Leaves whorled, ovate, acuminate. *Cynanchum nigrum*.
3. Leaves opposite. 4.
 4. Leaves simple. 5.
 4. Leaves compound. 15.
5. Stem with aerial roots or tendrils. 6.
5. Stem twining. 8.
 6. Aerial roots present. *Schizophragma hydrangioides*
 6. Tendrils present. 7.

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7. Leaves obtusely lobed at summit, lobes entire, petiole without glands. *Passiflora lutea*
7. Leaves 3-5 cleft, lobes serrate, petiole with 2 glands. *Passiflora incarnata*
 8. Leaves cordate or subcordate. 9.
 8. Leaves ovate or rounded. 10.
9. Leaves hirsute. *Gonolobus obliquus*
9. Leaves nearly smooth. *Cynanchum nigrum*
 10. Leaves distinct. *Lonicera japonica*
 10. Some of upper leaves connate. 11.
11. Leaves remotely strigose-pilose above. *Lonicera hirsuta*
11. Leaves glabrous above. 12.
 12. Connate upper leaves broader than long. *Lonicera prolifera*
 12. Connate upper leaves longer than broad. 13.
13. Leaves glabrous beneath. *Lonicera dioica*
13. Leaves pubescent or minutely pilose beneath. 14.
 14. Leaves minutely pilose beneath. *Lonicera sempervirens*
 14. Leaves pubescent beneath. *Lonicera dioica* var. *glaucescens*
15. With tendrils. *Bignonia capreolata*
15. Tendrils absent. 16.
 16. Climbing by rootlets. *Campsis radicans*
 16. Climbing by coiling petioles. 17.
17. Leaves with 3-7 leaflets, bright green, entire or 2-3 lobed. *Clematis viorna*
17. Leaves with 3-5 leaflets, usually toothed and lobed. 18.
 18. Leaves and shoots usually clustered at nodes of older growth. *Clematis verticillaris*
 18. Leaves and shoots not so clustered. *Clematis virginiana*
19. Leaves compound or decompound. 20.
19. Leaves simple. 27.
 20. Leaves digitate, plant with tendrils. 21.
 20. Leaves pinnate, biternate, or decompound. 22.
21. Leaves 5-foliate. *Parthenocissus quinquefolia*
21. Leaves 3-foliate, or 3-lobed. *Parthenocissus tricuspidata*
 22. Leaves biternate, or otherwise decompound. *Cardiospermum halicacabum*
 22. Leaves pinnate. 23.
23. Leaves odd-pinnate, leaflets 9-19. 24.
23. Leaves trifoliate. 25.
 24. Leaflets 9-15. *Wisteria frutescens*.
 24. Leaflets usually 15-19. *Wisteria floribunda*
25. Plants with aerial roots. *Rhus radicans*
25. Plants not as above. 26.
 26. Leaves ovate to subrotund, 10-15 cm. long, lobed. *Pueraria lobata*
 26. Leaves ovate to ovate-lanceolate, not lobed. *Clitoria mariana*
27. Woody twiners. 28.
27. Plants with aerial roots or tendrils. 31.
 28. Leaves serrulate. *Celastrus scandens*
 28. Leaves lobed or entire. 29.
29. Leaves peltate. *Menispermum canadense*
29. Leaves not peltate. 30.
 30. Leaves entire, short-petioled, oblong to ovate, acuminate, rounded to subcordate at base. *Cynanchum nigrum*
 30. Leaves usually with 1-2 basal and either divergent or deflexed lobes. *Solanum dulcamara*
31. With rootlets. *Hedera helix*
31. With tendrils. 32.
 32. Tendrils with adhesive disks. *Parthenocissus tricuspidata*
 32. Tendrils without disks. 33.

- 33. Older branches with woody partitions at leaf nodes. 34.
- 33. Branches not with woody partitions. 39.
 - 34. Under leaf surface with a felt-like layer of rusty brown hairs. *Vitis labrusca*
 - 34. Under leaf surface not so covered. 35.
- 35. Leaves densely woolly-hairy beneath when young, remaining so especially along the veins. 36.
- 35. Leaves pubescent or not, but not densely woolly-hairy beneath. 37.
 - 36. Leaves coarsely toothed and mostly prominently and deeply 3-5 lobed. *Vitis aestivalis*
 - 36. Leaves dentate or shallowly toothed and lobed. *Vitis cinerea*
- 37. Leaves conspicuously whitish or bluish-white beneath. *Vitis aestivalis* var. *argentifolia*
- 37. Leaves light or grey-green beneath. 38.
 - 38. Leaves coarsely and sharply toothed, indistinctly lobed. *Vitis vulpina*
 - 38. Leaves more or less toothed and strongly lobed. *Vitis riparia*
- 39. Leaves not lobed, broad ribbed, and net-veined. 40.
- 39. Leaves lobed. 44.
 - 40. Leaves strongly whitened beneath. *Smilax glauca*
 - 40. Leaves green or nearly so beneath. 41.
- 41. Peduncles shorter than petioles. *Smilax rotundifolia*
- 41. Peduncles longer than petioles. 42.
 - 42. Prickles weak and pliant, terete, leaves with thin margins. *Smilax tamnoides* var. *hispida*
 - 42. Prickles hard and rigid, broad based. 43.
- 43. Leaves thick-coriaceous and hard, with thickened margins. *Smilax bona-nox*
- 43. Leaves submembranaceous to thin-coriaceous, margins not thickened. *Smilax rotundifolia*
 - 44. Leaves obtusely lobed at summit, lobes entire. *Passiflora lutea*
 - 44. Lobes serrate. 45.
- 45. Petiole with 2 glands. *Passiflora incarnata*
- 45. Petiole without glands. 46.
 - 46. Plant nearly glabrous, leaves serrate and obscurely lobed. *Ampelopsis cordata*
 - 46. Plant pubescent, leaves serrate and obviously 3-lobed. *Ampelopsis brevipedunculata*
- 47. Plant pale or white, leaves reduced to minute scales. *Cuscuta* spp.
- 47. Plant green. 48.
 - 48. Leaves opposite or whorled. 49.
 - 48. Leaves alternate, sometimes the basal whorled. 63.
- 49. Leaves in whorls. 50.
- 49. Leaves opposite. 52.
 - 50. Leaves cordate-ovate with concave sides. *Dioscorea batatas*
 - 50. Leaves similar, with convex sides. 51.
- 51. Leaves deeply cordate and long-petioled. *Dioscorea villosa*
- 51. Leaves ovate, base rounded to subcordate, short-petioled. *Cynanchum nigrum*
 - 52. Leaves commonly compound, leaflets 3-7. 53.
 - 52. Leaves simple. 54.
- 53. Stem six angled. *Clematis viorna*
- 53. Stem not so. *Clematis virginiana*
 - 54. Plant with tendrils. 55.
 - 54. Plant without tendrils. 56.
- 55. Leaves 3-cleft, lobes serrate, petiole with 2 glands. *Passiflora incarnata*
- 55. Leaves obtusely lobed at summit, lobes entire. *Passiflora lutea*
 - 56. Plant harshly scabrous. 57.
 - 56. Plant not so. 58.
- 57. Principle leaves 3-lobed, yellow resinous-dotted beneath. *Humulus lupulus*
- 57. Principle leaves 5-7 lobed, not dotted beneath. *Humulus japonicus*

- 58. Leaves hirsute, abruptly acuminate. *Gonobolus obliquus*
- 58. Leaves smooth, or pubescent beneath. 59.
- 59. Stem six angled. *Clematis viorna*
- 59. Stem no so. 60.
- 60. Leaves cordate-ovate, with concave sides. *Dioscorea batatas*
- 60. Leaf margins convex. 61.
- 61. Leaves short-petioled. *Cynanchum nigrum*
- 61. Leaves long-petioled. 62.
- 62. Veins palmate, 7-11, prominent, not conspicuously branched. *Dioscorea villosa*
- 62. Veins pinnate, branches not prominent. *Ampelamus albidus*
- 63. Leaves simple. 64
- 63. Leaves compound. 95.
- 64. Plant with tendrils, or if without, narrowly to broadly ovate. 65.
- 64. Plant twining; or erect, later declined. 72.
- 65. Leaves not lobed. 66.
- 65. Leaves lobed. 69.
- 66. Plant erect, mostly without tendrils. *Smilax ecirrhata*
- 66. Plant climbing. 67.
- 67. Leaves glabrous beneath. *Smilax herbacea*
- 67. Leaves puberulent on veins beneath. 68.
- 68. Leaves short acuminate. *Smilax pulverulenta*
- 68. Leaves rounded, blunt, or short cuspidate. *Smilax lasioneura*
- 69. Leaves 3-5 cleft, lobes serrate. *Passiflora incarnata*
- 69. Leaves lobed, but not conspicuously serrate. 70.
- 70. Leaves lobed at summit, lobes entire. *Passiflora lutea*
- 70. Leaves palmately 5-lobed. 71.
- 71. Uppermost 2 sinuses acute. *Sicyos angulatus*
- 71. Uppermost 2 sinuses obtuse. *Echinocystis lobata*
- 72. Stem erect, later declined. *Convolvulus spithameus*
- 72. Stem twining. 73.
- 73. Leaves with an ocreae. 74.
- 73. No ocreae present. 76.
- 74. Ocreae reflexed-bristly at base. *Polygonum cilinode*
- 74. Ocreae smooth. 75.
- 75. Leaves hastate to triangular-cordate. *Polygonum convolvulus*
- 75. Leaves oblong-ovate, ovate, or broadly cordate. 76.
- 76. Leaf sinus usually narrow. *Polygonum scandens*
- 76. Leaf sinus usually broad. *Polygonum cristatum*
- 77. Leaves toothed. *Ipomea coccinea*
- 77. Leaves not so. 78.
- 78. Leaves pinnately divided. *Ipomea quamoclit*
- 78. Leaves not so. 79.
- 79. Leaves prominently veined. 80.
- 79. Leaves not prominently veined. 81.
- 80. Leaves cordate-ovate with concave sides. *Dioscorea batatas*
- 80. Leaves similar but sides convex. *Dioscorea villosa*
- 81. Petiole short, leaves oblong to ovate, acuminate, rounded to subcordate at base. *Cynanchum nigrum*
- 81. Petiole relatively long. 82.
- 82. Leaves prominently lobed, lateral lobe(s) separated from the terminal by a deep sinus. 83.
- 82. Leaves not as above. 85.
- 83. Lateral lobes small, 1-2. *Solanum dulcamara*
- 83. Lateral lobes approaching the terminal in size. 84.
- 84. Plant pubescent. *Ipomea hederacea*
- 84. Plant glabrous. *Ipomea coccinea*

- 85. Leaves ovate to cordate-ovate in general outline. 86.
- 85. Leaves triangular in general outline. 89.
 - 86. Stem pubescent. *Ipomea purpurea*
 - 86. Stem glabrous or only slightly pubescent. 87.
- 87. Leaves short-acuminate to apiculate. *Ipomea lacunosa*
- 87. Leaves acuminate. 88.
 - 88. Leaves cordate-hastate. *Ipomea coccinea*
 - 88. Leaves cordate, the lobes rounded or angled. *Ipomea pandurata*
- 89. Leaves sagittate. 90.
- 89. Leaves hastate. 92.
 - 90. Leaf tips rounded, apiculate to obtuse. *Convolvulus arvensis*
 - 90. Leaf tips acuminate, sometimes acute. 91.
- 91. Basal leaf lobes obtuse or rounded. *Convolvulus sepium* var. *repens*
- 91. Basal leaf-lobes with 1-3 conspicuous but scarcely acute angles. *Convolvulus sepium*
 - 92. Basal lobes not angled, terminal usually oblong. 93.
 - 92. Basal lobes angled. 94.
- 93. Tip rounded, obtuse or apiculate. *Convolvulus arvensis*
- 93. Tip acute. *Convolvulus japonicus*
 - 94. Terminal lobe oblong. *Convolvulus japonicus*
 - 94. Terminal lobe tapered to tip. 95.
- 95. Sinus of leaf V or U-shaped with sloping or divergent sides. *Convolvulus sepium*
- 95. Sinus of leaf quadrangular, sides nearly parallel. *Convolvulus sepium* var. *fraterniflorus*
 - 96. Stipules absent. 97.
 - 96. Stipules present. 100.
- 97. Plant with tendrils on corymbs. *Cardiospermum halicacabum*
- 97. Plant without tendrils. 98.
 - 98. Plant climbing by young leafstalk. *Adlumia fungosa*
 - 98. Plant twining. 99.
- 99. Leaf pinnately divided to midrib. *Ipomea quamoclit*
- 99. Leaf trifoliolate. *Galactia volubilis*
 - 100. Leaflets lobed. 101.
 - 100. Leaflets not lobed. 102.
- 101. Stem more or less retrorsely pubescent. *Strophostyles helvola*
- 101. Stem glabrous. *Pueraria lobata*
 - 102. Leaves trifoliolate. 103.
 - 102. Leaves with tendrils at end of rachis. 111.
- 103. Stem glabrous. 104.
- 103. Stem pubescent. 105.
 - 104. Leaflets deltoid-ovate. *Dolichos lablab*
 - 104. Leaflets ovate to ovate-lanceolate. *Clitoria mariana*
- 105. Leaflets ovate, rounded or apiculate. *Galactia volubilis*
- 105. Leaflets oblong, rhombic-ovate, or ovate, acute or acuminate. 106.
 - 106. Leaflets oblong to narrow-ovate. 107.
 - 106. Leaflets ovate or rhombic-ovate. 108.
- 107. Leaflets grey-silky pubescent. *Strophostyles leiosperma*
- 107. Leaflets glabrous to strigose-pilose beneath. *Strophostyles umbellata*
 - 108. Stem and petiole densely villous-hirsute. *Amphicarpa bracteata* var. *comosa*
 - 108. Pubescence less abundant. 109.
- 109. Veinlets uniting conspicuously near leaf margin. *Phaseolus polystachios*
- 109. Veinlets not as above. 110.
 - 110. Leaflets rhombic-ovate. *Amphicarpa bracteata*
 - 110. Leaflets ovate. *Strophostyles helvola*
- 111. Leaflets one pair. 112.
- 111. Leaflets 2 or more pairs. 114.

112. Stem winged. *Lathyrus latifolius*
 112. Stem wingless. 113.
113. Stipules 1-2 cm. long, about equalling petiole, linear-lanceolate to narrowly elliptic.
Lathyrus pratensis
113. Stipules 5-12 mm. long, oblanceolate to elliptic. *Lathyrus tuberosus*
 114. Stem winged. 115.
 114. Stem wingless. 117.
115. Leaves linear. *Lathyrus palustris* var. *linearifolius*
 115. Leaves elliptic. 116.
116. Stem stout, 1.5-3.0 mm. in diameter below lowest peduncle, leaflets 2-5 pairs,
 3.0-8.5 cm. long. *Lathyrus palustris*
 116. Stem slender, .5-1.5 mm. in diameter below lowest peduncle, leaflets 2-3(-5)
 pairs, 1.5-3.5 cm. long. *Lathyrus palustris* var. *myrtifolius*
117. Stipules large, near leaflet size. 118.
 117. Stipules small. 119.
118. Stipules symmetrical. *Lathyrus japonicus* var. *parviflorus*
 118. Stipules not symmetrical. *Lathyrus ochroleucus*
119. Stem more or less villous throughout. 120.
 119. Stem not villous. 121.
120. Stem spreading villous. *Vicia villosa*
 120. Stem appressed pubescent or glabrate. *Vicia dasycarpa*
121. Leaflets 2-6 pairs, 2-6 cm. long usually elliptic. 122.
 121. Leaflets smaller, or if not, the stipules serrate. 124.
122. Leaflets 2-3 pairs, elliptic to lanceolate, 2-4.5 cm. long. *Lathyrus palustris*
 var. *myrtifolius*
 122. Leaflets 5-6 pairs, elliptic to ovate, 1.5-6.5 cm. long. 123.
123. Stipules of larger leaves ovate-lanceolate, 2-3.5 cm. long. *Lathyrus venosus*
 123. Stipules of the larger leaves linear-lanceolate, .8-2.0 cm. long, plant hirtellous.
Lathyrus venosus var. *intonsus*
124. Stipules serrate. 125.
 124. Stipules not serrate. 128.
125. Leaflets 5-14 mm. broad. 126.
 125. Leaflets 1-4 mm. broad. 127.
126. Lateral leaf veins prominent in drying. *Vicia americana*
 126. Lateral veins not as above. *Vicia sativa*
127. Upper leaflets mucronate. *Vicia angustifolia*
 127. Upper leaflets emarginate or apiculate. *Vicia sativa* var. *linearis*
128. Lower stipular lobes with setiform segments. *Vicia hirsuta*
 128. Stipules entire (some semisagittate). 129.
129. Leaflets glabrate to silky, stem striate-angled. *Vicia cracca*
 129. Leaflets glabrous, stem smooth. 130.
130. Leaflets 2-5 pairs. *Vicia tetrasperma*
 130. Leaflets 6-12 pairs. *Vicia caroliniana*

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