

Journal of the Arkansas Academy of Science

Volume 23

Article 22

1969

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Recommended Citation

Smith, Edwin B. (1969) "Survey of the Arkansas Campanulaceae (Including the Lobeliaceae)," *Journal of the Arkansas Academy of Science*: Vol. 23 , Article 22.

Available at: <http://scholarworks.uark.edu/jaas/vol23/iss1/22>

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A SURVEY OF THE ARKANSAS CAMPANULACEAE (INCLUDING THE LOBELIACEAE)

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This paper is a summary of the Campanulaceae of Arkansas, based on the material on file in the University of Arkansas herbarium. A key to the species is included, followed by an alphabetical listing by genus and species of the taxa in the Campanulaceae known to occur in the state. After each taxon, the following information is included in this order: blooming period (as indicated on our material), known distribution in general terms (NW-northwest, E-east, G-general, C- central, etc.), habitat, chromosome number (as reported in Darlington & Wylie, 1955; in the Index to Plant Chromosome Numbers, Vol. I, II, and Supplement; and in Vol. 50 of *Regnum Vegetabile*), synonymy in double parentheses (this is minimized), citation of two specimens, and in some cases comments about the particular taxon. All of the taxa have been previously reported from the state. One species previously listed for the state is excluded. The survey includes 12 species in 4 genera. The distribution of most of the taxa is probably more extensive than indicated.

Differences in the key to the species, as compared to Steyermark (1963) or McVaugh (1943), reflect overlap in characters of *Lobelia appendiculata* and *L. spicata* observed in the study of Arkansas material.

KEY TO THE ARKANSAS CAMPANULACEAE (including the Lobeliaceae)

1. Anthers united in a ring about the style; flowers irregular2
2. Length of perianth, from base of calyx tube to the tip of the longest petal, about 7-12 mm (stem glabrous, spreading-hairy, or densely puberulent only at the base)3
3. Calyx becoming inflated as fruit matures, the tube portion becoming about 7-9 mm long in fruit; stem spreading-hairy at least toward the base and usually branched above*Lobelia inflata* L.
3. Calyx not inflating as fruit matures, the tube portion about 2-4 mm long in fruit; stem glabrous to sparsely hairy or densely puberulent toward the base, and usually unbranched above4
4. Median leaves broad-based, ovate to elliptical; stem glabrous or sparsely hairy toward the base; auricles

A Survey of the Arkansas Campanulaceae

- usually present, nearly always drying blue or purplish-blue (when auricles are absent, calyx lobes nearly always drying blue or purplish-blue) *Lobelia appendiculata* A. DC.
4. Median leaves usually tapering to a narrow base (sometimes broad-based), usually oblong to oblanceolate (sometimes elliptical); stem densely puberulent at the base; auricles absent or present, drying green or purplish (infrequently blue); calyx lobes drying green or purplish (infrequently blue)5
5. Auricles present and 1-5 mm long *Lobelia spicata* Lam. var. *leptostachys* (A. DC.) Mackenz. & Bush
5. Auricles absent, or present but less than 1 mm long *Lobelia spicata* Lam. var. *spicata*
2. Length of perianth, from base of calyx tube to tip of the longest petal, about 14-44 mm (when less than about 25 mm, stem uniformly densely puberulent)6
6. Perianth length about 30-44 mm; corolla usually bright red (rarely pink or white); filaments united in a tube about 18-35 mm long *Lobelia cardinalis* L.
6. Perianth length about 14-25 mm; corolla usually blue or purple (rarely pale purple or white); filaments united in a tube about 9-15 mm long7
7. Median leaves elliptical; stem uniformly densely puberulent *Lobelia puberula* Michx. var. *mineolana* E. Wimm.
7. Median leaves lanceolate; stem glabrous or very sparsely spreading-hairy *Lobelia siphilitica* L.
1. Anthers free; flowers regular8
8. Corolla whitish or greenish; flowers born in a dense terminal spike; filaments adnate to the corolla *Sphenoclea zeylanica* Gaertn.
8. Corolla blue or purplish; flowers born from the axils of leaves or in a loose terminal raceme; filaments free or nearly so9
9. Flowers with pedicels, in a loose terminal raceme; median leaves about 8-16 or more cm long *Campanula americana* L.
9. Flowers sessile or nearly so, 1-few in the axils of the leaves; median leaves about 0.5-3.5 cm long10
10. Median leaves linear, lanceolate, or oblong, about 5-8 times as long as wide *Specularia leptocarpa* (Nutt.)

Arkansas Academy of Science Proceedings

10. Median leaves reniform, orbicular, or ovate, about 1-3 times as long as wide 11
11. Pores in fruits (release of seeds is through lateral holes in the fruit wall) located near the summit of the fruits 12
12. Seeds 0.8-1.0 mm long, nearly flat, with shiny surface; leaves usually with 5 or more evident veins near the base; usually several flowers in bloom at once ... *Specularia lamprosperma* (McVaugh) Fern.
12. Seeds 0.5-0.65 mm long, plumply biconvex, the surface dull to somewhat shiny; leaves with 1 (or sometimes 3) evident vein(s) near the base; usually only 1 flower is in bloom at a time *Specular biflora* (R. & P.) Fisch. & Mey.
11. Pores in fruits located near the middle of the fruits (seeds as in *S. biflora*) ... *Specularia perfoliata* (L.) A. DC.

Campanula americana L.

June-Sept.; N & NW; rich moist woods, thickets; $2n = 34, 58, 102$; ((*C. americana* L. var. *illinoensis* (Fresn.) Farw.; *Campanulastrum americanum* (L.) Small)); Newton Co., A. McWilliam 103; Sharp Co., R. G. Wade 86.

Lobelia appendiculata A. DC.

April-early July; G; prairies, low woods; $2n = 14, 14 + 1$; Franklin Co., D. M. Moore 520545; Prairie Co., E. J. Palmer 25054. Overlaps morphologically with *L. spicata*, and perhaps would be better considered a variety of that species. Several specimens in our herbarium combine the characters of the two species in various ways, as, for example: auricles tiny or absent with calyx lobes drying blue, lower stem puberulent, and leaves broad-based.

Lobelia cardinalis L.

Late July-Sept.; G; moist woods, gravel bars near streams; $2n = 14, n = 7 + 1$; Saline Co., D. M. Moore 400376; Washington Co., E. B. Smith 1246.

Lobelia inflata L.

July-Oct.; C & N; open woods, stream banks, roadsides; $2n = 14$; Franklin Co., E. B. Smith 961; Polk Co., D. M. Moore 480549.

Lobelia puberula Michx. var. *mineolana* E. Wimm.

July-Oct.; W & S; moist sandy open areas; $2n = 14, n = 7 + 1$; Polk Co., A. McWilliam 530; Union Co., D. M. Moore 410320.

Lobelia siphilitica L.

Aug.-Oct.; N & C; wet meadows, stream banks; $2n = 14$; ((*L.*

A Survey of the Arkansas Campanulaceae

siphilitica L. var. *ludoviciana* A. DC.; *L. siphilitica* L.)); Sharp Co., R. G. Wade 135; Washington Co., M. Hite 639. The specimens we have of this species combine the nearly glabrous leaves of var. *ludoviciana* with the more or less hirsute calyx of var. *siphilitica*. The median leaves of our material are 1.3-3.6 cm wide at the widest part of the blade. Steyermark (1963) noted that the varieties are not well marked in Missouri, and the same can be said of Arkansas. I do not believe the varietal designations are useful in Arkansas material.

Lobelia spicata Lam.

This species overlaps morphologically with *L. appendiculata* in all or nearly all characters.

var. *spicata*

May-June; W & S; open woods, moist prairies; $2n = 14$; ((*L. spicata* Lam. var. *parviflora* A. Gray; *L. spicata* Lam. var. *originalis* McVaugh)); Benton Co., D. Demaree 6779; Franklin Co., E. B. Smith 914. Material of one collection (E. B. Smith 914) had white anthers, a characteristic of var. *campanulata* McVaugh. This variety has been recorded from northern Missouri by Steyermark (1963), but is not known from Arkansas. The corolla color of my collection 914 was pale blue (characteristic of var. *spicata*), not dark purplish-blue (characteristic of var. *campanulata*), and it therefore probably differs from typical var. *spicata* by merely a single gene. McVaugh (1943) indicated that his var. *campanulata* may be only a minor genetic variant of var. "*parviflora*" (a synonym of var. *spicata*).

var. *leptostachys* (A. DC.) Mackenz. & Bush

Late May-Aug.; G; open woods, moist prairies; $2n = ?$; ((*L. leptostachys* A. DC.)); Franklin Co., E. B. Smith 967; Stone Co., D. M. Moore 56-225.

A variety *hirtella* Gray, differing in being more or less hirtellous throughout, has been collected in Missouri (Steyermark, 1963) but probably does not occur in Arkansas.

Specularia biflora (R. & P.) Fisch. & Mey.

May-June; N & C; roadsides, open woods, fields; $2n = 28$; Benton Co., D. M. Moore 450.380; Sebastian Co., D. M. Moore 4113.

Specularia lamprosperma (McVaugh) Fern.

May-June; W & C; open upland woods, prairies; $2n = ?$; Conway Co., J. E. Moore 698; Logan Co., H. H. Iltis 5360. Depauperate specimens of this species resemble *S. biflora*.

Specularia leptocarpa (Nutt.) Gray

May-July; W near Ark. River valley; dry ledges, open sandy cliffs; $2n = ?$; Franklin Co., D. M. Moore 480149; Logan Co., D. M. Moore 4330.

Specularia perfoliata (L.) A. DC.

April-June; G; roadsides, open areas; $2n = ?$; Sevier Co., J. C. Nickerson 9A; Washington Co., I. L. Brown (no number).

Sphenoclea zeylanica Gaertn.

Aug.-Nov.; E; marshy areas, rice fields; $n = 12$; Arkansas Co., R. Toler 37; Lonoke Co., D. M. Moore 420351.

EXCLUDED SPECIES

Lobelia brevifolia Nutt.

This species was reported for the state by Branner & Coville (1891), but we have no specimens of it. Small (1913) and McVaugh (1936, 1943) reported it from Florida to Louisiana, near the coast.

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