
Variation in *Amelanchier* (Rosaceae) and *Centaurium* (Gentianaceae)

WILLIAM J. HESS, University of Oklahoma, Norman

Amelanchier in Oklahoma

The genus *Amelanchier* is represented in Oklahoma by one species, *A. arborea* (Michx.) Fern. (Waterfall, 1966). One of the key characters utilized by Gleason and Cronquist (1963) and Fernald (1950) in determining this species is ovary glabrous at the summit. A recent collection of a pubescent-fruited specimen of *Amelanchier* (Hess, no. 675) from McCurtain County in the spring of 1966 has pointed out some variation in this key character. Jones (1946) in his monograph of the genus included in his fruit-character key the pubescent-fruited *A. arborea* var. *alabamensis* (Britt.) G. N. Jones. A description of this taxon fits the McCurtain County specimen and other pubescent-fruited specimens in the Bebb Herbarium at the University of Oklahoma. Although Jones cited only four collections, one from Arkansas and three from Alabama, he recognized this taxon apart from *A. arborea* var. *arborea*. Earlier workers, such as Britton and Shafer (1908) and Small (1933), recognized *A. arborea* var. *alabamensis* as a distinct species but, according to Jones, only the pubescence of the fruit distinguishes it from the typical *A. arborea*.

Oklahoma specimens in the Bebb Herbarium show the pubescent fruited *Amelanchier* to be in McCurtain, Pushmataha, LeFlore, Cherokee, Mayes, Delaware, and Osage counties, whereas the glabrous-fruited taxon is in Bryan, LeFlore, Muskogee, Cherokee, Delaware, Ottawa, and Osage counties. The former shows a relatively even distribution throughout the mountains in the eastern end of the state and the latter is predominantly northeastern in distribution. The glabrous-fruited plants according to Jones (1946) range from Maine to Minnesota, southward to Louisiana and Florida with specimens at the Bebb Herbarium from more northern states and Arkansas. Our out-of-state specimens of the pubescent-fruited plants are from Arkansas. This suggests a southern distribution for the pubescent-fruited taxon. Since both varieties are present here, Oklahoma is in an area of overlapping distribution. Work needs to be done on the ranges and variation within these taxa to determine if they are distinct or just exhibiting normal variation within the species.

Centaurium in Oklahoma and Texas

Centaurium beyrichii (T. & G.) Robins. occurs on limestone in the south central part of Oklahoma and extends south in Texas to the eastern

and central part of the Edwards Plateau. With this species in Oklahoma and probably in populations throughout Texas is a white-flowered form, *C. beyrichii* forma *albiflorum* Waterfall. In Comanche County, Oklahoma, *C. texense* (Griseb.) Fern. has been collected and occurs in parts of the Edwards Plateau and west Texas. These species are distinct morphologically, the former with corolla lobes 8-12 mm long and the latter's corolla lobes 4-6 mm long.

A third species, *C. calycosum* (Buckl.) Fern., is sympatric in part with *C. beyrichii* on the Edwards Plateau. Small (1913) separates them on the basis of obtuse corolla lobes for *C. calycosum* and acute lobes for *C. beyrichii* but this character is not consistently obvious. *C. calycosum* appears to be the more variable of the two in that it may be 6 dm tall, have a few-flowered cyme, open paniculate branching with elliptical to oblanceolate leaves or approach *C. beyrichii* which may be 3 dm tall, have a many-flowered cyme, fastigiate branching, and narrow, linear leaves.

It is in the area of sympatry where the most confusion has been. Gray (1878) described *Erythraea calycosa* var. *nana* (*C. calycosum* var. *nanum* (Gray) Robins.) from the rocky hills of western Texas. He states that it "approaches *E. beyrichii* . . ." consequently, these may be the plants where sympatry occurs. Study is needed to determine if these plants are environmental variants of either taxon or distinct genetic populations. To date, little or nothing along these lines is known about these plants. A morphological examination of specimens of these taxa in the Bebb Herbarium at the University of Oklahoma indicates quantitative characters which enable one to distinguish them. Gray's variety is included in *C. calycosum* and is not recognized as a distinct taxon at this point. More precise information is needed about the specimens that he examined.

A key is presented for the taxa of *Centaurium* in Oklahoma and Texas as recognized by Waterfall (1966) and Gould (1962) respectively. *Centaurium calycosum* (Buckl.) Fern. var. *breviflorum* Shinners was seen at the herbarium of Southern Methodist University through the courtesy of Dr. Lloyd H. Shinners. This last taxon occurs in the southern part of Texas, the type coming from Cameron County (Shinners, 1950).

1. Filaments (5.5) 6-7.5 mm long; corolla lobes 8-12 mm long; corolla tube (10) 11-15 mm long; style 10-16 mm long.
2. Corolla pink *C. beyrichii*
2. Corolla white *C. beyrichii* forma *albiflorum*
1. Filaments 2-5 (5.5) mm long; corolla lobes 4-9 mm long; corolla tube 7-12 (12.5) mm long; style 5-10 mm long.
3. Filaments 4-5 (5.5) mm long; corolla lobes 7-10 mm long; corolla tube 9-11 mm long; style 7-10 mm long; anthers tightly coiled after anthesis *C. calycosum* var. *calycosum*
3. Filament less than 4 mm long; corolla lobes 4-7 mm long; corolla tube 7-12 mm long; style 5-7 mm long; anthers slightly coiled after anthesis.
4. Corolla lobes 5-7 mm long; corolla tube 7-9 mm long.....
..... *C. calycosum* var. *breviflorum*
4. Corolla lobes 4-6 mm long; corolla tube 9-12 mm long.....
..... *C. texense*

LITERATURE CITED

- Britton, N. L. and J. A. Shafer. 1908. *North American Trees*. H. Holt and Co., New York, New York.
- Fernald, M. L. 1950. *Gray's Manual of Botany*. 8th ed. American Book Co., New York, New York.
- Gleason, H. A. and A. Cronquist. 1963. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. D. Van Nostrand Co., Inc., New York, New York.
- Gould, F. W. 1962. *Texas Plants — A Checklist and Ecological Summary*. Texas Agricultural Experimental Station, College Station, Texas.
- Gray, A. 1878. *Synoptical Flora of North America*. Vol. II, Pt. 1. Ivison, Blakeman, Taylor and Co., New York, N.Y.
- Jones, G. N. 1946. American Species of *Amelanchier*. Ill. Biol. Monogr. 20(2):1-126.
- Shinners, L. H. 1950. *Centaurium calycosum* (Buckley) Fernald var. *brevisflorum* Shinners. Field and Lab. 18:130.
- Small, J. K. 1913. *Flora of the Southeastern United States*. 2nd ed. John Kunkel Small, New York, New York.
- Small, J. K. 1933. *Manual of the Southeastern Flora*. John Kunkel Small, New York, New York.
- Waterfall, U. T. 1966. *Keys to the Flora of Oklahoma*. 3rd ed. Published privately, Stillwater, Oklahoma.
-