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## Notes on the Arkansas Saxifragaceae

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## ABSTRACT

Over half of the Arkansas members of the Saxifragaceae are notable due to unusual morphology or distribution within the state. They range from the inconspicuous *Lepuropetalon spathulatum* (Muhl.) Ell. to the conspicuous *Hydrangea arborescens* L. Several genera (*Heuchera*, *Parnassia*, *Philadelphus*, *Ribes*) include species with highly restricted ranges in Arkansas, and one includes a single species, *Mitella diphylla* L., known in Arkansas only from Stone County. Special attention is called to problems in *Saxifraga* and *Heuchera*, and a modified treatment of *Heuchera arkansana* is proposed. An annotated list and list of excluded names for the Arkansas Saxifragaceae is included.

## INTRODUCTION

Over half of the Arkansas members of the Saxifragaceae are notable due to unusual morphology or unusual distribution within the state. They range from the diminutive and inconspicuous *Lepuropetalon spathulatum* (Muhl.) Ell. (often only 4-8 mm tall) to the conspicuously flowering *Hydrangea arborescens* L. (about 1-2 m tall). Several genera (*Heuchera*, *Parnassia*, *Philadelphus*, *Ribes*) include species with highly restricted ranges in Arkansas. *Mitella diphylla* L. is known in Arkansas only from Stone County. Attention is called to some problems in the Arkansas *Saxifraga* and *Heuchera* and an annotated list and a list of excluded names for the Arkansas Saxifragaceae is provided.

## PROBLEMS IN SAXIFRAGA AND HEUCHERA

The common *Saxifraga* of northern Arkansas is *S. palmeri* Bush (cf. Spongberg, 1972). This species is not, however, covered in the Flora of Missouri (Steyermark, 1963) and other commonly used manuals of our area (Radford et al., 1968; Correll & Johnston, 1970; Fernald, 1950; Small, 1903, 1933). Consequently, most material of *S. palmeri* in Arkansas is misidentified as *S. virginianensis*. *Saxifraga palmeri* is covered (as *S. "virginiana"* var. *subintegra* Goodman) in Waterfall (1969) but is not distinguished from *S. virginianensis* in that manual. The species *S. palmeri* and *S. virginianensis* are separated by the following differences (Steyermark, 1959):

<i>S. palmeri</i>	<i>S. virginianensis</i>
Leaves entire or nearly so	Leaves crenate-dentate
Pedicels glabrous or glabrate	Pedicels mostly glandular-pubescent
Scapes with mostly non-glandular hairs	Scapes glandular-pubescent

Some collections of *S. palmeri* in northern Arkansas (with slightly denticulate leaves or somewhat glandular pubescence) appear to be somewhat contaminated with *S. virginianensis*, but I have seen only two Arkansas collections that are clearly *S. virginianensis*: P.O. Money 68. Pulaski Co. Rich wooded north-facing slope about 0.4 miles south of Interstate 40 at Shilcut Bayou Bridge, March 12, 1974. NE La. U. Herbarium, Monroe, La.; L.R. Stobaugh 45. Pulaski Co. 4 mi. E. of Fort Roots in N. Little Rock. Wooded hillside, April 2, 1969. Ark. Tech. U. Herbarium, Russellville, Ark.

A recent find of a *Heuchera* in Arkansas with a glabrous calyx (the standard keys offer a choice of calyx villous or calyx glandular) led to a detailed examination of the Arkansas *Heuchera* (and some material borrowed from the U. of Georgia, Athens, Ga.). The glabrous-calyx plant is clearly a form of *H. villosa* Michx. var. *villosa*, similar in other aspects to that variety (Table I). The most recent monograph of *Heuchera* (Rosendahl et al., 1936) did not list *H. villosa* for Arkansas, but this glabrous-calyx form of *H. villosa* var. *villosa* had not been collected in the state as of 1936. Spongberg (1972) also did not list *H. villosa* for Arkansas.

The examination of the Arkansas and Georgia material of *Heuchera* convinced me that there are few differences between *H.*

*arkansana* Rydb. and *H. villosa* Michx. var. *macrorrhiza* (Small) Rosend., Butt. & Lak. (see Table I). Spongberg (1972) noted that *H. arkansana* is closely allied to *H. villosa* var. *macrorrhiza*. *Heuchera arkansana* Rydb. was described (Small & Rydberg, 1905) on the bases of leaf blade shape, shape of the teeth on the leaf, and the length of the flowering branches: blades broadly reniform, teeth broadly ovate and mucronate, flowering branches 1-2 dm high—versus blades cordate to orbicular-cordate, teeth triangular, flowering branches 2-6 dm high in *H. villosa*. As treated by most authors today, *H. villosa* includes the variety *macrorrhiza* (Small) Rosend., Butt. & Lak., with leaf shape and lobes similar to those in *H. arkansana*. The teeth of the leaves of var. *macrorrhiza* may be more triangular (less mucronate) than those of the leaves of *H. arkansana*, but this character is by no means clear-cut. With the exceptions of less pubescent calyx and shorter flowering branches, *H. arkansana* would make a perfectly good *H. villosa* var. *macrorrhiza*. These two differences are not, in my opinion, sufficient for separation of *H. arkansana* from *H. villosa* at the species level. Wells (1977, personal comm.), a graduate student at the U. of North Carolina working on a biosystematic study of *Heuchera* of North America east of the Rocky Mountains, agrees that *H. arkansana* should be merged with *H. villosa* (she is inclined to submerge var. *macrorrhiza* in var. *villosa*, a step with which I would not presently agree). Because of the consistency of the differences between *H. arkansana* and *H. villosa* var. *macrorrhiza* and the differences in range (*H. arkansana* endemic to the Arkansas Ozark region; *H. villosa* var. *macrorrhiza* more eastern and northern), it is suggested that *H. arkansana* be treated as a variety of *H. villosa*:

*Heuchera villosa* Michx. var. *arkansana* (Rydb.) E.B. Smith, COMB. NOV.

*H. arkansana* Rydb. In Small, J. K. and P. A. Rydberg 1905. Saxifragaceae. North Amer. Flora 22(2):101. N.Y. Bot. Gard. TYPE: United States: Arkansas: Benton Co. Shady cliffs, near Springdale. J. W. Blankinship, s.n. Aug. 16, 1895. (GH!). Note: The terminal lobes of the leaves on the type specimen are about as long as wide, in contrast with most collections I have seen which have terminal leaf lobes about twice as wide as long. Apparently the leaf lobing character is not always consistent.

## ANNOTATED LIST OF THE ARKANSAS SAXIFRAGACEAE

In the following list the distribution in Arkansas is indicated, followed by citation of one voucher specimen. The voucher specimens are on file at the U. of Arkansas Fayetteville Herbarium, unless otherwise indicated. Several of these taxa were not listed for Arkansas by Spongberg (1972).

- Heuchera americana* L. var. *brevipetala* Rosend., Butt. & Lak. Garland, Hof Springs, Logan, Ouachita & Pulaski Cos.; Iltis 5055.  
*Heuchera americana* L. var. *hirsuticaulis* (Wheelock) Rosend., Butt. & Lak. NW 1/4 (+ Jefferson Co.); Moore 410113.  
*Heuchera parviflora* Bartl. Izard and Stone Cos.; Moore 540734.

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- Heuchera puberula* Mackenz. & Bush  
Cleburne, Conway, Dallas & Van Buren Cos.; Moore 420270.
- Heuchera villosa* Michx. var. *arkansana* (Rdyb.) E. B. Smith  
Benton, Faulkner & Washington Cos.; Demaree 4560.
- Heuchera villosa* Michx. var. *villosa*  
Benton, Cleburne, Newton & Pope Cos.; Smith 3096.
- Hydrangea arborescens* L.  
N  $\frac{3}{4}$  (+ Ouachita Co.); Smith 1496.
- Itea virginica* L.  
SE 3/5; Moore 480193.
- Lepuropetalon spathulatum* (Muhl.) Ell.  
S  $\frac{1}{4}$ ; Moore & Iltis 53159.
- Mitella diphylla* L.  
Stone Co.; Smith 1777.
- Parnassia grandifolia* DC.  
E. Ozark region; Lipscomb 347.
- Penthorum sedoides* L.  
General; Miller 605.
- Philadelphus hirsutus* Nutt.  
N-central; Tucker 8485.
- Philadelphus inodorus* L.  
Logan Co.; Demaree 35281 (SMU Herbarium, Dallas, Tex.).
- Philadelphus pubescens* Loisel.  
NW  $\frac{1}{2}$ ; Miller 149.
- Ribes curvatum* Small  
Howard, Montgomery, Pike & Polk Cos.; Tucker 14200 (Ark. Tech. U. Herbarium, Russellville, Ark.).
- Ribes cynosbati* L.  
Logan & Polk Cos.; Iltis 5055a.
- Ribes missouriense* Nutt.  
Ozark region; Justis 56.
- Ribes odoratum* Wendl. f.  
Ozark region; Bush 15429A.
- Saxifraga palmeri* bush  
NW  $\frac{1}{2}$ ; Lipscomb 346.
- Saxifraga texana* Buckl.  
Benton, Bradley, Drew, Pulaski, Sebastian & Washington Cos.; Moore 410019.
- Saxifraga virginiana* Michx.  
Pulaski Co.; Stobaugh 45 (Ark. Tech. U. Herbarium, Russellville, Ark.).

## EXCLUDED NAMES

- Heuchera americana* L. var. *interior* Rosend., Buft & Lak.  
We have specimens that would key to this entity, from Conway, Garland, Johnson & Little River Cos. However, these are intermediate between var. *brevipetala* and var. *hirsuticaulis*, and probably represent hybrids between those two varieties.
- Hydrangea arborescens* L. var. *deamii* St. John  
The several varieties (including this one) and forms listed by Steyermark (1963) are probably not worth recognizing (cf. Tucker, 1976).
- Parnassia caroliniana* Michx.  
Reports of this in Arkansas are probably based on misidentified *P. grandifolia* DC. Sponberg (1972) indicated the range of *P. caroliniana* was North and South Carolina, Florida, and Mississippi.

- Philadelphus pubescens* Loisel. var. *intectus* (Beadle) Rehd.  
This variety, listed by Demaree (1943), is considered synonymous with the species.
- Ribes americana* Mill.  
This species, listed by Demaree (1943), is a more northern species (cf. Fernald, 1950) not represented in any Arkansas material I have seen.
- Ribes missouriense* Nutt. var. *ozarkanum* Fassett  
The var. *ozarkanum* intergrades with typical material to the extent that it is probably not worth recognizing.
- Tiarella cordifolia* L.  
We have no voucher material of this species from Arkansas. It was listed by Demaree (1943), but until authentic voucher material is located I am considering it excluded.

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## Notes on the Arkansas Saxifragaceae

Table 1. A comparison of the Arkansas and the Atlantic *H. villosa* var. *villosa*, and of *H. arkansana* and *H. villosa* var. *macrorhiza*.

CHARACTER	VAR. VILLOSA	VAR. VILLOSA	H. ARKANSANA <sup>1</sup>	H. VILLOSA VAR MACRORHIZA
	VAR. VILLOSA (Atlantic race)	VAR. VILLOSA (Arkansas race)		
Pubescence of calyx	sparsely to medium villous	glabrous (but ciliate on calyx lobes)	sparsely to medium villous	densely villous
Peduncle length	long (about 20-50 cm)	long (about 20-50 cm)	short (about 7-15 cm)	long (about 20-50 cm)
Leaf lobes	sharp; terminal lobes about as long as wide	sharp; terminal lobe about as long as wide	blunt; terminal lobe about twice as wide as long	blunt; terminal lobe about twice as wide as long
Pubescence of the axis of the inflorescence	sessile or nearly sessile glands (longest hairs about 0.05-0.1 mm long)	sessile or nearly sessile glands (longest hairs about 0.05-0.1 mm long)	stipitate and sessile glands (longest hairs about 0.2-0.4 mm long)	stipitate and sessile glands (longest hairs about 0.2-0.4 mm long)
Pubescence of lower surface of the leaves	medium-pubescent with hairs confined mostly or entirely to the major veins	medium-pubescent with hairs confined mostly or entirely to the major veins	rather densely pubescent, with hairs on and between the major veins	rather densely pubescent, with hairs on and between the major veins
Pubescence of upper surface of the leaves	subglabrous, with scattered appressed hairs	subglabrous, with scattered appressed hairs	moderately to densely pubescent, with ascending hairs	moderately to densely pubescent, with ascending hairs
Range	Virginia and West Virginia to Georgia, Alabama and Tennessee	Ozark region of Arkansas (endemic)	Ozark region of Arkansas (endemic)	Virginia and West Virginia to Georgia, Alabama, Tennessee

<sup>1</sup>To be renamed *Heuchera villosa* Michx. var. *arkansana* (Rydb.) E. B. Smith.