

## ***OXALIS TRIANGULARIS* (OXALIDACEAE) NATURALIZED IN THE ARKANSAS FLORA**

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### **ABSTRACT**

*Oxalis triangularis* is reported here for the first occurrence outside of cultivation in Arkansas and, apparently, only the fourth state-level occurrence of this species for the continental USA. Escaped plants of *O. triangularis* are documented from Clark Co., Arkansas, from the edge of a highly disturbed, urban greenbelt and riparian zone habitat. An additional specimen from 1982 of *O. triangularis* from a disturbed habitat in Pulaski County also is documented. Photographs of *O. triangularis* in habitat and a key to identification of the acaulescent *Oxalis* species currently known from the Arkansas flora are provided.

In 2021, three plants of *Oxalis triangularis* St.-Hill. (purple shamrock) were collected from the edge of a highly disturbed, urban greenbelt and riparian zone in Clark Co., Arkansas (Figs. 1–2). One plant was reproductive with flowers; the other two were small, sterile, and with only a single leaf (Fig. 2). The plants occurred toward the top of a steep, semi-wooded embankment at the edge of the riparian zone. The site is surrounded on two sides by residential areas. The larger plant was located at the top of the embankment on the edge of the remnant of an old fence line, adjacent to the property line of a residence. The two smaller plants were located about three meters down the embankment and several meters from the larger plant. No cultivated plants of *O. triangularis* were observed in the vicinity, but it is possible that the largest of the three plants was long-persistent from prior cultivation. The remnant of what appeared to be an ornamental bed was present along the fence line of the adjacent property. Nesom (2009, 2016) cited instances in Florida and Louisiana of *O. triangularis* escaping into disturbed habitats from cultivated plants in the vicinity. A similar pattern of establishment may have occurred with the Arkansas plants.

An additional naturalized occurrence of *O. triangularis* in Arkansas is known from Pulaski County, documented by a plant collected in 1982 from a disturbed habitat within the city of Little Rock.

*Oxalis triangularis* is an acaulescent, rhizomatous, perennial herb that is native to South America (Nesom 2009, 2016). This species is cultivated for its showy and colorful, usually dark purple leaves. It previously has been reported as a component of the naturalized floras of Alabama, Florida, and Louisiana (Wunderlin & Hansen 2011; Kartesz 2015; Nesom 2016; Weakley 2020; Wunderlin et al. 2021). Our records of *O. triangularis* mark the first documented occurrences of this species outside of cultivation in Arkansas (Smith 1994; Arkansas Vascular Flora Committee 2006; Gentry et al. 2013; Serviss & Peck 2013) and, apparently, only the fourth state-level occurrence for the continental USA.



Figure 1. A–C. *Oxalis triangularis* escaped in Clark Co., Arkansas. A. Plant with flowers, inflorescence, and leaves. B. Rhizomes. C. Petioles, rhizomes, and roots. The same plant also is shown in Figure 2A.

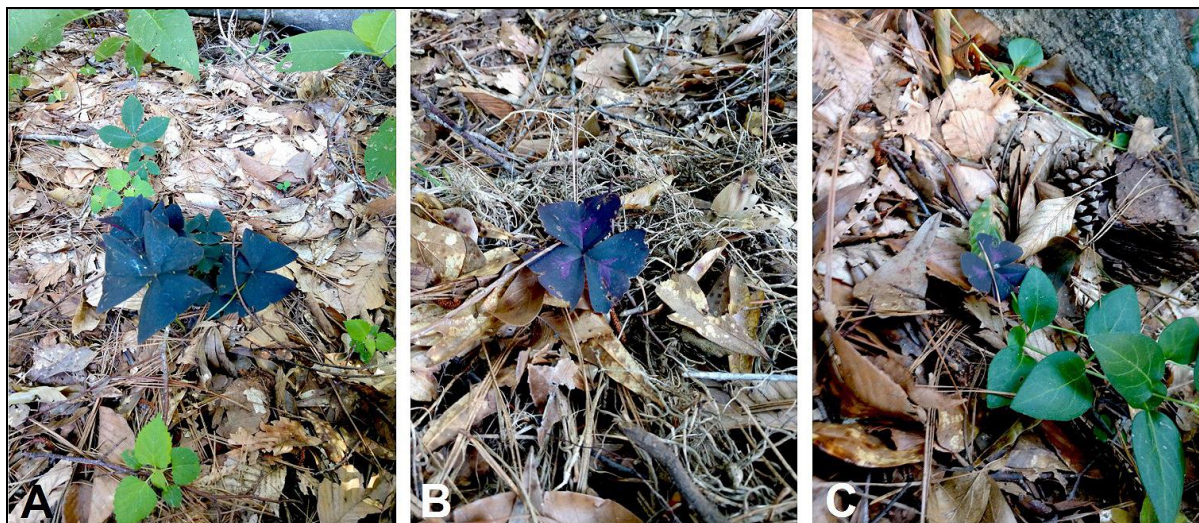


Figure 2. A–C. *Oxalis triangularis* naturalized in Clark Co., Arkansas. All three plants from the site are shown. The plant in Figure A occurred at the top of the embankment and at the edge of the property line of a residence, in close proximity to what appeared to be the remnant of an ornamental bed. The plants in Figures B–C were small, each with only a single leaf. The smaller plants were separated from the larger one by several meters and occurred about three meters down the embankment from the property line.

**Voucher specimens. Arkansas. Clark Co.:** Arkadelphia, off Elaine Circle, S and E of intersection of Elaine Circle and 21<sup>st</sup> St., near top of steep, semi-wooded embankment, just beyond property line of residence, at the edge of a highly disturbed, urban greenbelt and riparian zone, bordered on both sides by residential areas, three, small plants, one reproductive with flowers, 19 Jun 2021, *Serviss 8748* (HEND). **Pulaski Co.:** North Little Rock, T2W R11W, in sandy dirt, 5 Sep 1982, *Luyet 31* (HEND).

*Oxalis triangularis* somewhat resembles the other native and naturalized species of acaulescent *Oxalis* currently known from the Arkansas flora (Fig. 3). It can be distinguished from them by the following key (modified from Nesom 2009; Wunderlin & Hansen 2011; Horne et al. 2013; Nesom 2016).

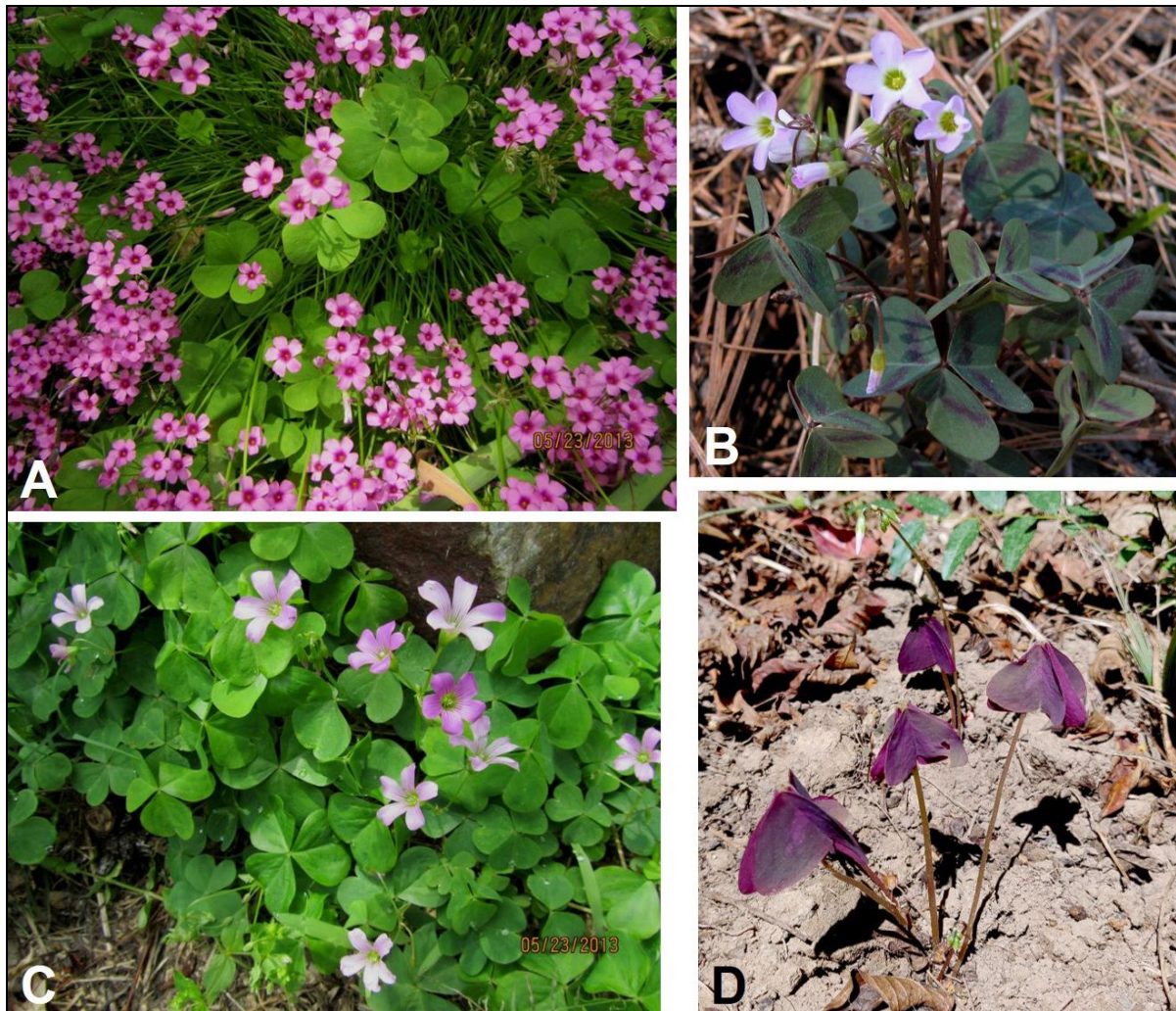


Figure 3. A–D. Acaulescent species of *Oxalis* known from the Arkansas flora, for comparison with *Oxalis triangularis*. A. *Oxalis articulata*, plant and flowers. B. *Oxalis violacea*, plant and flowers (photo by Renn Tumblison, Henderson State University). C. *Oxalis debilis*, plant and flowers. D. *Oxalis triangularis*, plant and flower; leaflets have lavender coloration on both surfaces (photo by Keenan Serviss).

1. Leaflets obtriangular to obovate-triangular, purple or occasionally green on the adaxial surface, often with lighter lavender or violet coloration radiating from the midvein, and purple to reddish-purple on the abaxial surface, lobes of leaflets apically truncate to slightly rounded; calcium oxalate deposits absent or present but then restricted to short marginal lines on either side of the notch ..... ***Oxalis triangularis***
1. Leaflets rounded-obcordate or sometimes obreniform, green on the adaxial surface, sometimes with purple lateral bands on the leaflets in *O. violacea*, and green or pale to darker purple on the abaxial surface, lobes of leaflets rounded; calcium oxalate deposits present on margins and/or over the entire surface of the leaflet (*O. articulata* and *O. debilis*) or only at the margins but restricted to the base of the notch (*O. violacea*).
  2. Sepals pubescent with appressed, short-pilose trichomes; callosities present mostly along margins of leaflets; plants arising from a thick, often elongate, irregularly nodulate-segmented rhizome ..... ***Oxalis articulata***
  2. Sepals glabrous or at most sparsely pubescent; callosities usually distributed over most or the entire surface of leaflets (or only at the apical notch in *O. violacea*); plants arising from a dense cluster of bulblets or a single bulb.
    3. Leaflets 2.5–4.5 cm long ..... ***Oxalis debilis***
    3. Leaflets 0.8–1.5 cm long ..... ***Oxalis violacea***

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#### LITERATURE CITED

- Arkansas Vascular Flora Committee. 2006. Checklist of the Vascular Plants of Arkansas. Arkansas Vascular Flora Committee, Fayetteville.
- Gentry, J.L., G.P. Johnson, B.T. Baker, C.T. Witsell, and J.D. Ogle. 2013. Atlas of the Vascular Plants of Arkansas. Vascular Flora Project, Univ. of Arkansas, Fayetteville.
- Kartesz, J.T. 2015. Taxonomic Data Center. The Biota of North America Program (BONAP). Chapel Hill, North Carolina. <<http://www.bonap.org/index.html>> Accessed June 2021.
- Horne, H.E, T.W. Barger, and G.L. Nesom. 2013. Two South American species of *Oxalis* (Oxalidaceae) naturalized in Alabama and the USA, first report. *Phytoneuron* 54: 1–7.
- Nesom, G.L. 2009. Taxonomic notes on acaulescent *Oxalis* (Oxalidaceae) in the United States. *Phytologia* 91: 501–526.
- Nesom, G.L. 2016. *Oxalis* (Oxalidaceae). Pp. 134–145, *in* Flora of North America Editorial Committee (eds.). Flora of North America North of Mexico, Vol. 12. Oxford Univ. Press, New York and London.
- Serviss, B.E. and J.H. Peck. 2013. Rediscovery of *Persea borbonia* var. *borbonia* (Lauraceae), *Prosopis glandulosa* var. *glandulosa* (Fabaceae), and *Pinus palustris* (Pinaceae) in Arkansas, with three new angiosperm species for Arkansas (U.S.A.). *J. Bot. Res. Inst. Texas* 7: 841–845.
- Smith, E.B. 1994. Keys to the Flora of Arkansas. Univ. of Arkansas Press, Fayetteville.
- Weakley, A.S. 2020. Flora of the Southeastern United States. Edition as of 20 October 2020. Univ. of North Carolina Herbarium (NCU), Chapel Hill. <<http://www.herbarium.unc.edu/flora.htm>> Accessed June 2021.

- Wunderlin, R.P. and B.F. Hansen. 2011. Guide to the Vascular Plants of Florida. Third Edition. Univ. Press of Florida, Gainesville.
- Wunderlin, R.P., B.F. Hansen, A.R. Franck, and F.B. Essig. 2021. Atlas of Florida Plants. [S.M. Landry and K.N. Campbell (application development), USF Water Institute.] Institute for Systematic Botany, Univ. of South Florida, Tampa. <<https://florida.plantatlas.usf.edu/>> Accessed September 2021.