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New county records of three Baptisia species in Arkansas, with an updated distribution map

Cover Page Footnote

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New County Records of Three *Baptisia* Species in Arkansas, with an Updated Distribution Map

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Running title: New Arkansas *Baptisia* records

The genus *Baptisia* (Fabaceae), known by the common names “wild indigo” and “false indigo,” is found throughout the eastern United States (USDA, NRCS 2020). Five species of the genus are native to Arkansas: *B. alba* var. *macrophylla*, *B. australis*, *B. bracteata*, *B. nuttalliana*, and *B. sphaerocarpa*, with occasional hybridization events between *B. sphaerocarpa* and *B. bracteata* (Kartesz 2015). These species are normally found in habitats with high rates of natural disturbance, and historically, these habitats have been prairies, barrens, and open-understory forests (Kartesz 2015; USDA, NRCS 2020). Today, *Baptisia* species are also found in areas of high human disturbance, including old-fields and roadsides.

Baptisia species serve essential roles in their ecosystems. They have deep root systems and rapidly recover from disturbance. *Baptisia* species are often among the first spring forbs to emerge and serve as nectar sources and host plants for butterflies. For example, the Texas frosted elfin (*Callophrys irus hadros*) is a presumably rare butterfly that is dependent on *Baptisia* as a host for their larvae (Albanese *et al.* 2007; Peterson *et al.* 2010). The Texas frosted elfin—a subspecies of the frosted elfin (*Callophrys irus*) complex—was listed as a species of greatest conservation need in the 2015 Arkansas Wildlife Action Plan (Fowler 2015). Additionally, two more Arkansas butterfly species rely on *Baptisia* spp. as larval hosts—the wild indigo duskywing (*Erynnis baptisiae*) and the hoary edge (*Achalarus lyciades*)—and the plants serve as important nectar sources for many other species (Opler and Wright 1999; Covell 2005; Powell and Opler 2009; Gobeil and Gobeil 2016). With the conversion of Arkansas prairie and barren habitats in the last century, as well as extensive fire suppression, the range of Arkansas *Baptisia* species has probably been reduced (Stephens *et al.* 2008).

In March and April of 2018, we located six new

Arkansas county records of *Baptisia* species while surveying for the Texas frosted elfin. Plants were found predominantly during driving surveys of roads or in walking surveys of open habitats with regular disturbance. Specimens were identified as *Baptisia* spp. by the distinct trifoliate leaves, asparagus-like immature raceme, and the pale green coloration. Species were identified by flower color—*B. alba*, white; *B. nuttalliana*, *B. bracteata*, and *B. sphaerocarpa*, yellow; *B. australis*, blue (Larisey 1940). Inflorescence type was used to distinguish species with the same flower color. *Baptisia sphaerocarpa* and *B. bracteata* inflorescences have numerous flowers borne in long (<15cm) racemes, whereas flowers of *B. nuttalliana* are solitary, occasionally in short (>5cm) racemes. *Baptisia sphaerocarpa* displays vertical racemes while *B. bracteata* displays horizontal racemes (Larisey 1940). Current distribution records were utilized from the 2013 *Atlas of Vascular Plants of Arkansas* (Gentry *et al.* 2013) as well as records from the Biota of North America Program (Kartesz 2015). New county records were located for three species: *B. alba*, *B. nuttalliana*, and *B. sphaerocarpa* (Fig. 1).

For *B. alba*, these new records in conjunction with the previously known distribution suggest that the species has existed unobserved in Polk and Perry Counties, and our finding has filled in the research gaps. The same can be said for our discovery of *B. nuttalliana* in Hot Spring County. The discovery of *B. sphaerocarpa* in Pike, Howard, and Clark Counties, however, indicates a notable southward range extension for the species in Arkansas.

All of our records were found along roadsides, railroads, and utility rights-of-way, although some plants within stands penetrated the edges of nearby forest areas. These observations suggest that landscapes managed for anthropogenic purposes are functioning as simulated prairie for these plants and

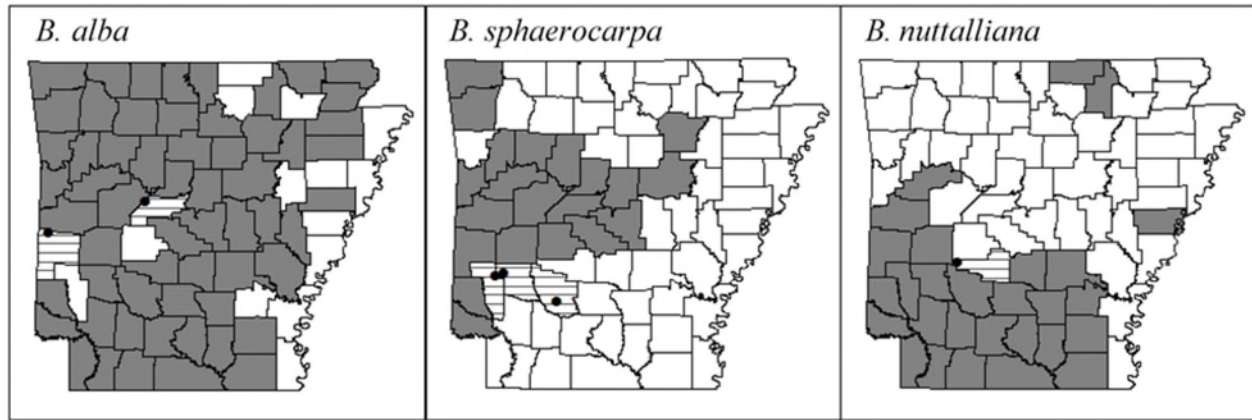
New Arkansas *Baptisia* records

Fig. 1. Updated distribution of three *Baptisia* species across the counties of Arkansas. Previously known occurrences are shown in dark gray (Kartesz 2015), and new county records are shown with black dots in striped counties.

possibly allowing for their expansion across the state. Additionally, our specimens were found near areas suspected to have large pre-settlement areas of prairie, suggesting that these plants have succeeded because of pre-adaptation to the high levels of disturbance of areas managed for human use. Though remaining prairie areas are reduced and connectivity is low in Arkansas, roads are probably serving as dispersal corridors for *Baptisia* species.

One voucher specimen was collected for each population. These specimens are deposited in the Hendrix College Herbarium (HXC), listed by specimen accession numbers, and are available to interested researchers.

New records of distribution

Baptisia alba (L.) Vent. var. *macrophylla* (Larisey) Isley

Perry County: 4 km west of Casa on Hwy 10. Stand of 40 individuals growing alongside railroad track located on 29 April 2018. N 35.0257° W 93.0879°, elevation 125 m. Accession Number: HXC006052.

Polk County: 1.5 km east of Rich Mountain on Hwy 59. Stand of 8 individuals growing alongside Hwy 59 located on 22 May 2018. N 34.6853° W 94.3235°, elevation 460 m. Accession Number: HXC006054.

Baptisia sphaerocarpa Nutt.

Pike County: 4.9 km east of Newhope on Hwy 70. Stand of 5 individuals growing alongside Hwy 70 located on 21 April 2018. N 34.2426° W 93.8305°, elevation 170 m. Accession Number: HXC006055.

Howard County: 5.0 km west of Newhope on Hwy 70. Stand of approximately 1,000 individuals growing alongside Hwy 70 found on 15 April 2018. N 34.2127° W 93.9329°, elevation 180 m. Accession Number: HXC006050.

Clark County: 3.4 km north of Gurdon on Hwy 67. Stand of approximately 50 individuals growing with *B. nuttalliana* alongside Hwy 67. N 33.9480° W 93.1449°, elevation 61 m. Accession Number: HXC006053.

Baptisia nuttalliana Small

Hot Spring County: 19.8 km east of Amity on Amity Rd. Stand of approximately 100 individuals found alongside Amity Rd on 9 May 2018. N 34.3634° W 93.3316°, elevation 140 m. Accession Number: HXC006051. Note, the site was disturbed by heavy machinery in 2019, but plants appear to be re-sprouting.

Literature Cited

- Albanese G, PD Vickery, and PR Sievert.** 2007. Microhabitat use by larvae and females of a rare barrens butterfly, frosted elfin (*Callophrys irus*). *Journal of Insect Conservation* 12:603-615.
- Covell CV.** 2005. A field guide to moths of eastern North America. Virginia Museum of Natural History, Martinsville, VA, USA. p 332.
- Fowler A (Ed).** 2015. Arkansas Wildlife Action Plan. Arkansas Game and Fish Commission, Little Rock, Arkansas, USA. 1678 pp
- Gentry JL, GP Johnson, BT Baker, CT Witsell, and JD Ogle.** 2013. Atlas of the Vascular Plants of Arkansas. Arkansas Vascular Flora Project, Fayetteville, AR, USA.

- Gobeil RE and RMF Gobeil.** 2016. Wild Indigo Duskywing, *Erynnis baptisiae* (Forbes), in Maine. News of the Lepidopterist's Society 58:142-144.
- Kartesz JT.** The Biota of North America Program (BONAP). 2015. *North American Plant Atlas*. (<http://bonap.net/napa>). Chapel Hill, N.C. [maps generated from Kartesz, J.T. 2015. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP). (*in press*)]. <<http://bonap.net/napa>> Accessed 5 Feb. 2020.
- Larisey MM.** 1940. A monograph of the genus *Baptisia*. Annals of the Missouri Botanical Garden 27:218-244.
- Opler PA and AB Wright.** 1999. Peterson field guide to western butterflies. Houghton Mifflin Company, Boston, USA. 560 p.
- Peterson CE, AA Mohrus, BA Peterson, and BA McQuaid.** 2010. Multiyear study of factors related to flowering phenology and reproductive yield of *Baptisia alba* in Northeastern Illinois. Transactions of the Illinois State Academy of Science 103:109-117.
- Powell JA and PA Opler.** 2009. Moths of western North America. University of California Press, Berkeley, CA, USA. 383 p.
- Stephens SE, JA Walker, DR Blunck, A Jayaraman, DE Naugle, JK Ringelman, and AJ Smith.** 2008. Predicting risk of habitat conversion in native temperate grasslands. Conservation Biology 22:1320-1330.
- USDA, NRCS.** 2020. The PLANTS Database. National Plant Data Team, Greensboro, NC, USA. <<http://plants.usda.gov>> Accessed 1 Feb. 2020.