NOTEWORTHY COLLECTIONS FROM THE ALABAMA FLORA (U.S.A.)

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ABSTRACT

From continued botanical exploration in Alabama, noteworthy collections representing seventeen taxa are included. Thirteen of these taxa are reported new to Alabama while the remaining four are significant for historical considerations. Each taxon cited below is vouchered into the University of West Alabama Herbarium (UWAL) with duplicates to be distributed.

RESUMEN

De la continua exploración botánica en Alabama, se incluyen colecciones notables que representan diecisiete taxones. Trece de estos taxones son nuevos en Alabama, mientras que los cuatro restantes son importantes por consideraciones históricas. Cada taxón citado a continuación está incluido en el herbario de la Universidad de West Alabama (UWAL) y se distribuirán duplicados.

Dicranopteris flexuosa (Schrad.) Underw. (GLEICHENIACEAE)—Voucher specimen: **Mobile Co.:** 14 Jul 2020, *G. Todia s.n.* (UWAL) (**Fig. 1**). This primarily tropical fern was first documented in the United States from Alabama on 15 Jun 1913 by L.H. McNeill. He made a specimen (US) from the only plant observed along a railroad bank cut about 1.5 mi E of Delchamps Station on Mon Louis Island in southern Mobile County (Maxon 1914). McNeill visited again on 15 May 1914 and made an additional specimen (NCU). The site was visited on 3 Dec 1916 by A.H. Howell whereupon he made additional specimens (US) one of which includes a photo of the individual plant. Graves (1920) visited the site in 1918 but found the site had been altered and the plant was no longer present. The species has since been discovered in Florida (Nauman 1993) but was not seen again in Alabama until 14 Jul 2020 when rediscovered by Todia in the same general area but a different site. The habitat for the new occurrence was primarily on the vertical banks of an anthropogenic origin ditch sheltered from the overhang above with a few individuals occurring above the ditch on flat ground.

Isotrema macrophyllum (Lam.) C.F. Reed (ARISTOLOCHIACEAE)—Voucher specimens: **Jackson Co.:** 23 Sep 2019, *B.R. Keener 11,624 with Bill and Beth Finch* (UWAL); 17 Apr 2020, *B.R. Keener 11,755 with Bill and Beth Finch* (UWAL). These collections represent the first unambiguous documentation for this taxon in Alabama. Mohr (1901) included the species [as *Aristolochia macrophylla* Lam.] in *Plant Life of Alabama* and cited T.M. Peters in Winston County as the source. It is unclear what evidence Mohr used (via Peters) for the inclusion as no specimen has been located to substantiate this species as part of the Alabama flora. Without a voucher, *I. macrophyllum* was excluded from a state checklist (Kral et al. 2011) and from a family treatment of the Aristolochiaceae for North Alabama (Spaulding et al. 2018). The above discovery in Jackson County was in

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Fig. 1. First collection of *Dicranopteris flexuosa* from Alabama in 104 years (Mobile Co. 14 Jul 2020, *Todia s.n.*, UWAL0054256).

the Plateau Escarpment (68c) Level IV Ecoregion (Griffith et al. 2001) in mesic woods along a small stream over Monteagle Limestone (Osborne et al. 1989). The new location represents a small southern range extension from contiguous counties in Tennessee for this southern Appalachian endemic (Kartesz 2024).

Herbertia lahue (Molina) Goldblatt (IRIDACEAE)—Voucher specimen: **Winston Co.:** 20 Apr 2021, *J.K. England 11,938 with J. Calloway.* (**Fig. 2B**). This collection and accompanying iNaturalist observation (#74992194) represent the first documentation for this taxon in Alabama (see Mohr 1901; Kral et al. 2011; Keener et al. 2024). Even though this species is native to North America in eastern Texas, Louisiana, and southwestern Mississippi, it is more than likely not native to the Alabama flora (Kartesz 2024). The plants were discovered alongside an all-terrain vehicle (ATV) trail, which may have led to an introduction event through hitchhiking propagules adhering to the equipment until dropping along the trail.

Juncus hybridus Brot. (JUNCACEAE)—Voucher specimen: **Baldwin Co.:** 26 Mar 2019, *B.R. Keener 11,034* (NCU, UWAL) (**Fig. 3**)—Determined by Wesley Knapp. This appears to be the first documentation of this species from Alabama (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024; Knapp & Sorrie 2023). The voucher was collected along the causeway in Mobile Bay where it occurred just off the roadside in sand-mud depressions created from vehicular use. The native distribution has been attributed to the Mediterranean and Middle East regions but is now also widespread as an introduction in southern South America, southern Africa, and Australia (Kirschner et al. 2002). In North America, it has been documented from the western United States and northwestern Mexico (POWO 2024). *Juncus hybridus* is a member of section *Tenageia*, a group of mostly annual species (e.g., *J. bufonius* L.) that exhibit confusing morphological plasticity. For further discussion, see Kirschner et al. 2002.

Micranthes careyana (A. Gray) Small (SAXIFRAGACEAE)—Voucher specimen: **Jackson Co.:** 17 Apr 2021, *B.R. Keener 12,161 with Bill and Beth Finch* (UWAL). (**Fig. 2E**). This voucher appears to represent the first collection of this taxon from Alabama (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). In the treatment for *Flora of North America* (Brouillet and Elvander 2009), Alabama was included within the species distribution, but no specimens have been located to verify this inclusion. One specimen at US (*Edson s.n.*) identified as *Saxifraga careyana* A. Gray is attributed to Alabama by the database; however, the provided locality is "Roan Mountain," which could be Tennessee or North Carolina. The discovery in Alabama is a simple range extension to the south and west of the previously known distribution in the southern Appalachians, including contiguous counties in Georgia and Tennessee (Kartesz 2024). The sizable population of 50-75 plants occurred on seepy cascading rock formation just under the bluff on the northwestern face of Sand Mountain in the Plateau Escarpment (68c) Level IV Ecoregion (Griffith et al. 2001).

Sedum thartii L.P. Hébert (CRASSULACEAE)—Voucher specimen: **Madison Co.:** 15 Jun 2015, *B.R. Keener* 8987 (UWAL) (**Fig. 4**). This is the first report for this taxon in Alabama (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). *Sedum thartii* is a European species of natural allopolyploid derivation between *S. montanum* Songeon & Perrier and *S. rupestre* L. (=*S. reflexum* L.). While the precise native range is undefined, Gallo and Zika (2014) contend that *S. thartii* is almost completely allopatric in a continental distribution, habitat, and climate from its purported parents which are low elevation Mediterranean (*S. rupestre*) and montane-alpine (*S. montanum*). Gallo and Zika (2014) also reported naturalized records of *Sedum thartii* in North America from Colorado, Maine, Ohio, Oregon, Washington, and Ontario while explaining that many records were previously misidentified as *S. reflexum* or other taxa in the series *Rupestria*. The only other records of a southeastern United States *Sedum* in this series are *S. reflexum* from DeKalb County, Georgia (*J. Allison 2321*, GA) (Jones & Coile 1988; SERNEC 2024) and *S. rupestre* (Krakowiak & Shaw 2019). Both of the records should be re-examined taxonomically. The Alabama record occurred at a ruderal pull-off site along the roadside, perhaps a common turnaround spot. Eight to ten clumps occurred along the gravel-broken pavement margin.

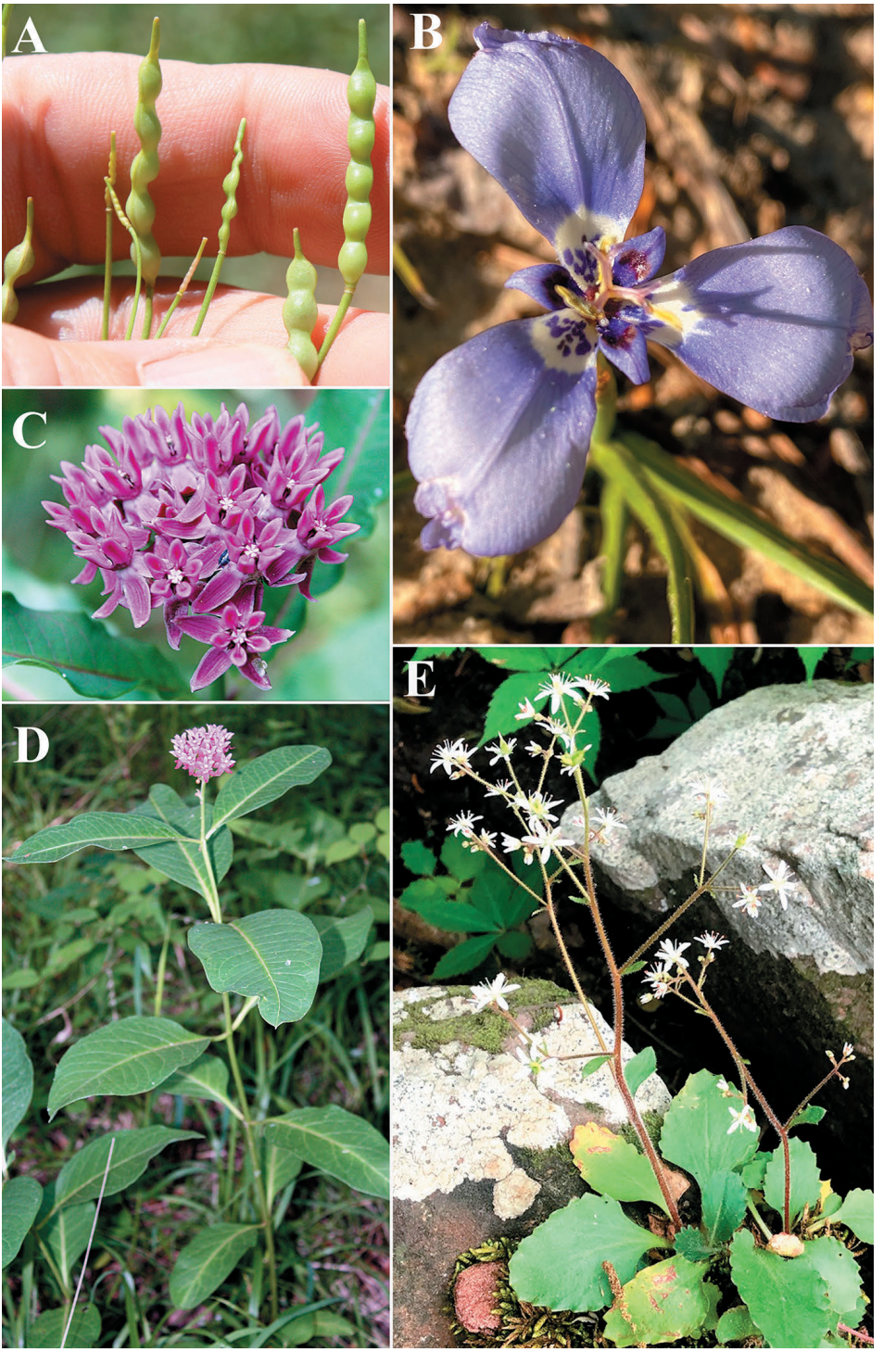

Fig. 2. **A.** *Leavenworthia torulosa* A. Gray, Cullman County, AL. **B.** *Herbertia lahue* (Molina) Goldblatt, Winston County, AL. **C.** and **D.** *Asclepias purpurascens* L., Etowah County, AL. **E.** *Micranthes careyana* (A. Gray) Small, Jackson County, AL. (Photos A, B, C, and D by Kevin England; Photo E by Brian Keener).

Fig. 3. *Juncus hybridus* Brot. (26 Mar 2019, *Keener 11,034,* UWAL0052530).

Fig. 4. *Sedum thartii* L.P. Hebert (15 Jun 2015, *Keener 8987*, UWAL0033761).

Viola inconspicua Blume (VIOLACEAE)—Voucher specimen: **Baldwin Co.:** 21 Jan 2021, *G. Todia s.n.* (UWAL). This voucher represents the first collection of this species from Alabama (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). *Viola inconspicua* is a native of Asia and appears to be spreading in North America where documentation has occurred in Georgia, Florida, Maine, and Texas (Ballard et al. 2023). It appears to be spreading through the nursery trade but becomes a pernicious weed once established in an area through seeds and rhizomes. The above voucher was taken from a lawn at a private residence. The species at that location was inadvertently introduced from nursery stock around 2015 and would continue to spread throughout the lawn and flowering plant beds without control efforts (Todia pers. obs.).

Begonia grandis Dryand (BEGONIACEAE)—Voucher specimens: **Winston Co.:** 17 Aug 2014, *B.R. Keener 8558 with T. Keener* (UWAL); 20 Oct 2016, *B.R. Keener 9892 with J. Rundles* (UWAL). These vouchers represent the first recorded naturalized occurrence of this species in Alabama and perhaps North America (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). Additional observations are also recorded in iNaturalist (from 2015-2024) but can be difficult to discern between cultivated occurrences and naturalized ones. However, several of the iNaturalist observations are clearly of cultivated occurrences while other observations (e.g. Great Smoky Mountain National Park) may be naturalized. The Alabama occurrences vouchered above were discovered at Natural Bridge Park, a privately owned recreational park known for a substantial rock bridge and rock houses at the cliff bases formed in Pottsville Sandstone. It is likely *B. grandis* was cultivated at the park at one time but now is persisting and spreading vegetatively in areas that were clearly never planted. Plants were occupying much space under the rock bridge and in the sheltered rock houses. The population produces flowers but no fruits were observed.

Geranium robertianum L. (GERANIACEAE)—Voucher specimen: **Madison Co.:** 8 Apr 2020, *B. Finzel s.n.* (UWAL). This is the first known recorded occurrence of this species in Alabama (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). The primary native range of this species in North America is in the Northeast but also with scattered localities to the south and west of the primary distribution (Kartesz 2024). To the far west in Oregon and Washington, *G. robertianum* has become well established and considered weedy (Kartesz 2024). The Alabama occurrence was represented by a single, non-cultivated plant at a private residence where perhaps it was inadvertently introduced through landscape plantings. It is most likely that *G. robertianum* is not native to Alabama.

Leavenworthia torulosa A. Gray (BRASSICACEAE)—Voucher specimens: **Cullman Co.:** 22 Mar 2020, *J.K. England 10,762* (UWAL) & 9 Apr 2020, *J.K. England 10,852* (UWAL). (**Fig. 2A**). This taxon was last collected and recorded in Alabama from Madison County in 1880, (*Mohr s.n.* [UNA]) and presumed extirpated from the state (Keener et al. 2024; Alabama Natural Heritage Program® 2023). Its primary distribution is central Tennessee extending into Kentucky, where it occurs in thin soil over limestone in open habitats (Al-Shehbaz & Beck 2010). The new record was from a highly disturbed habitat where crushed limestone was utilized in highway construction. It is likely this occurrence is a recent reintroduction through the inclusion of seeds from the crushed limestone obtained from somewhere in the main distribution of the species.

Asclepias purpurascens L. (APOCYNACEAE)—Voucher specimens: **Etowah Co.:** 26 May 2021, *J.K. England 12098 with K. Lybarger* (UWAL) & 26 May 2021, *J.K. England 12,100 with K. Lybarger & C. Jones* (UWAL). (**Figs. 2C & 2D**). These collections likely represent the first known occurrences for this taxon in (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). The habitat was the margin of bottomland hardwoods in clay soil typical of Coosa Prairies in northeast Alabama. Based on the widespread distribution of *A. purpurascens* in the eastern half of the United States, the newly discovered Alabama populations are not surprising, as it is known from Georgia, Mississippi, and Tennessee (Kartesz 2024).

Nemophila maculata Benth. ex Lindl. (HYROPHYLLACEAE)—Voucher specimen: **Jefferson Co.:** 26 Mar 2019, *P. Tate s.n.* (UWAL). This is likely the first documentation for this taxon in Alabama as a naturalized element of the flora (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). The annual species,

commonly known as "Five Spot" (based on the prominent purple spots on the white petals), is native to California and commonly cultivated and included in wildflower mixes. Currently, there are fifteen observations in iNaturalist attributed to Alabama but discerning between those that are decidedly cultivated versus naturalized occurrences is difficult. Only one of those observations (#21977987) from Etowah County predates the above voucher by two days.

Condea floribunda (Briq. ex Micheli) Harley & J.F.B. Pastore (LAMIACEAE)—Voucher specimens: **Baldwin Co.:** 24 Aug 1996, *H.S. Larsen s.n.* (UWFP); 11 Aug 2012, *B.R. Keener 7425* (UWAL) (**Fig. 5**); 17 Sep 2016, *J.R. Burkhalter 25,945* (UWFP); *J.R. Burkhalter 25,953* (UWAL, UWFP); *J.R. Burkhalter 25,955* (UWFP); 9 Oct 2016, *J.R. Burkhalter 25,969* (UWFP); *J.R. Burkhalter 25,971* (UWAL, UWFP). These vouchers represent the first documentation of this taxon for Alabama (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). The species is native to South America and was only recently reported new to the continental United States based on Burkhalter collections made in Escambia County, Florida in 1984 (Franck et al. 2016). The vouchers cited above are from Baldwin County which is adjacent Escambia County, Florida. The species appears quite weedy, occurring in roadside ditches and embankments sometimes co-occurring with a related invasive *Cantinoa mutabilis* (A. Rich.) Harley & J.F.B. Pastore (LAMIACEAE).

Salvia reflexa Hornem. (LAMIACEAE)—Voucher specimen: **Limestone Co.:** 28 Jul 2021, *B.R. Keener 12,286 with R. Sewell* (UWAL). The voucher cited above and the accompanying iNaturalist observation (#88884181) represent the first occurrence records of this taxon for Alabama (Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). The native distribution of *S. reflexa* is from the Midwest, across the Great Plains and into the desert southwest of the United States. Additional scattered localities representing perhaps introduced occurrences extend east and west of the native distribution (Kartesz 2024). The Alabama location was at the margin of a lawn and mixed young woods overgrown by the invasive *Ligustrum sinense* Lour. Only a single plant occurred at this locality but because it was deemed an introduced species to Alabama, the plant was vouchered.

Verbena stricta Vent. (VERBENACEAE)—Voucher specimen: **Madison Co.:** 12 Jun 2020, *J.K. England 11,100 with C. Easterwood* (UWAL). This collection likely represents the second record for this species in the state. The first account is an ambiguous literature citation that attributed the taxon to Cullman County but without any reference to specific voucher data (Moldenke 1980). Lacking a definitive voucher, the taxon was not included in a statewide checklist (Kral et al. 2011). The native range of *V. stricta* is centered in the Midwestern United States with scattered localities to the east and west, some of which may be introduced (Kartesz 2024). The Alabama occurrence was discovered in an open maintained field along a primitive road. It is likely that *V. stricta* is not native to Alabama.

Eurybia macrophylla (L.) Cass. (ASTERACEAE)—Voucher specimen: **Colbert Co.:** 18 Aug 2018, *B.R. Keener 10,840* (UWAL). This is the first documentation of this species from Alabama. (see Mohr 1901; Kral et al. 2011; Keener et al. 2024; Kartesz 2024). The Alabama occurrence is a southern range extension from the primary distribution in the Appalachian and Great Lake regions extending into New England and Canada (Kartesz 2024). The population of ca. 20 plants occurred in mesic rocky woods at Cane Creek Canyon Preserve, which is located in the Little Mountain Level IV Ecoregion (Griffith et al. 2001). The seemingly healthy basal rosettes were first noticed many years ago (prior to 2003) and continually but unsuccessfully monitored for flowering stage development (J. Lacefield, pers. comm.). On 6 Jun 2017, one plant was extracted and grown in a pot whereupon two flowering stems emerged on Aug 2018. The voucher material was made from these stems.

Ptilimnium ahlesii Weakley & G.L. Nesom (APIACEAE)—Voucher specimen: **Baldwin Co.:** 6 Jul 2022, *B.R. Keener 12,516.5 with G. Todia and J. Davies* (UWAL) (**Fig. 6**). This collection and report represents the first inclusion of this species in the Alabama flora (see Kral et al. 2011; Keener et al. 2024; Kartesz 2024; Weakley et al. 2023). The taxon was formally described in 2004 from tidal freshwater marshes along the Atlantic Coastal

Fig. 5. *Condea floribunda* (Briq. ex Micheli) Harley & J.F.B. Pastore (11 Aug 2012, *B.R. Keener 7425*, UWAL0058390).

Fig. 6. *Ptilimnium ahlesii* Weakley & G.L. Nesom, (6 Jul 2022, *B.R. Keener 12,516.5*, UWAL0054339).

Plain in North Carolina, South Carolina, and Georgia (Weakley & Nesom 2004). The description provided an official name for the entity that was previously referred to in various sources and specimens as "*P. macrospermum*," a name proposed, but never validly published, by Henry Ahles. The new Alabama record was discovered in a coastal bottomland and floodplain forest adjacent to a tidally influenced section of the Tensaw River in the Floodplains and Low Terraces (75i) Level IV Ecoregion (Griffith et al. 2001).

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