

ADDENDUM TO THE VASCULAR FLORA OF THE HANCOCK BIOLOGICAL STATION, MURRAY STATE UNIVERSITY, CALLOWAY COUNTY, KENTUCKY, U.S.A.

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ABSTRACT

A vascular plant reconnaissance was conducted at the Hancock Biological Station (HBS) of Murray State University during the summers of 2012–2015. The HBS a 37.5-ha tract of mainly upland oak-hickory forest, is located 23 km from Murray, Kentucky, in northeastern Calloway County within the Jackson Purchase Region. In 2007, a floristic study of HBS reported 573 specific and infraspecific taxa in 334 genera from 121 families. Twenty-one additional taxa (12 native, 9 non-native) have been documented from incidental collections. Thirteen taxa were new Calloway County distribution records including five Kentucky-listed invasive species. *Ulmus alata* was also documented as a new host tree for *Phoradendron leucarpum* ssp. *leucarpum* in Calloway County. The documented native and exotic flora of HBS presently consists of 594 taxa, 345 genera, and 126 families.

KEY WORDS: Hancock Biological Station, Calloway County, invasive plants, Kentucky vascular flora

RESUMEN

Un reconocimiento de plantas vasculares se llevó a cabo en la Estación Biológica Hancock (HBS) de la Universidad Estatal de Murray durante los veranos de 2012 a 2015. El HBS, un tramo de 37,5 hectáreas principalmente de bosque de roble-nogal de tierras altas, se encuentra a 23 km de Murray, Kentucky, en el noreste del Condado de Calloway en la Región Compra Jackson. En 2007, un estudio florístico de HBS reportó 573 taxones específicos e infraespecíficos de 334 géneros de 121 familias. Veintiún nuevos taxones (12 nativos, 9 no nativos) han sido documentados en colecciones incidentales. Trece taxones fueron nuevos registros de distribución del Condado de Calloway, incluyendo cinco especies invasoras listadas en Kentucky. *Ulmus alata* también fue documentado como un nuevo árbol huésped de *Phoradendron leucarpum* ssp. *leucarpum* en el Condado de Calloway. La flora nativa y exótica documentada de HBS actualmente consta de 594 taxones, 345 géneros y 126 familias.

Hancock Biological Station (HBS) was founded in 1966 by Hunter M. Hancock, Professor of Biology at Murray State University from a 16.2-ha tract of old fields, pastures, and secondary successional upland oak-hickory forest in northeastern Calloway County (White 2002). The HBS now consists of a 37.5-ha tract that adjoins Kenlake State Resort Park to the north, impounded Kentucky Lake shoreline of the Tennessee River on the east, and Pacer Point to the southeast off Watersport Road. The HBS is located 24 km from Murray, the county seat of Calloway County, the southeastern-most county of the eight county Jackson Purchase Region.

Thompson (2003) recorded 560 taxa in 320 genera from 110 families from 1998–2002 in a checklist of the vascular plants of HBS. Thompson (2007) designated 10 habitats at HBS in an on-going floristic study conducted during the summers of 2003–2006. Forest vegetation is predominately upland stands of dry or dry-mesic oak-hickory forest, and mid-successional oak-hickory woodlands, which border various culturally derived ruderal areas, wetland habitats, and an old field burnt warm-season restored prairie. Thompson (2007) reported the known vascular flora from Hancock Biological Station as 573 specific and infraspecific taxa, 334 genera, and 121 families. Woods and Fuller (1988) listed 1018 taxa, 462 genera, and 129 families for the vascular flora of Calloway County.

In conjunction with teaching an undergraduate/graduate field botany course at HBS during the summers of 2012–2015, we conducted a floristic reconnaissance within the boundaries of HBS and collected representa-

tive vouchers for taxa new to the station. Several newly discovered plants have volunteered and colonized existing HBS habitats since the 2007 survey report.

Nomenclature and classification follow Jones (2005), with three exceptions that reflect recent familial recircumscriptions, i.e., *Paulownia* is transferred from Bignoniaceae to Paulowniaceae, *Mazus* from Scrophulariaceae to Mazaceae, and *Celtis* from Ulmaceae to Cannabaceae (Stevens 2001). Herbarium acronyms follow *Index Herbariorum* from Thiers (2014), i.e., Berea College Herbarium (BEREA), University of Florida Herbarium (FLAS), and Murray State University Herbarium (MUR). This addendum to the HBS annotated list mainly follows the format of Thompson (2007). Symbols preceding the scientific name of a taxon may include: an asterisk (*) for a non-native taxon; a double asterisk (**) for a state-listed invasive species by the KY-EPPC (2013); a dagger (†) for a native or exotic planted taxon; and a diesis (§) for a Calloway County distribution record based on the maps of Campbell and Medley (2012) and USDA, NRCS (2014). Relative abundance values are abbreviated as Rare (R); Scarce (S); Infrequent (I); Occasional (O); Frequent (F); and Abundant (A)

ALISMATACEAE

Echinodorus cordifolius (L.) Griseb., Creeping Burhead, emergent at Kentucky Lake shoreline east of Watersport Road; R. Associate: *Carex crus-corvi*; 27 Jun 2014, J.R. Abbott & R.L. Thompson 26525 (BEREA). This was in very young bud when found and was transplanted to await flowering. The original inflorescence died, but the plant reflowered and was pressed 20 Aug 2014.

ASTERACEAE

‡**Senecio vulgaris* L., Common Groundsel, aggregate gravel at the side border of the Mesocosm Building; R, 30 Jun 2013, R.L. Thompson & J.R. Abbott 13-252 (BEREA). Campbell and Medley (2012) mapped six Kentucky counties for this European annual weed.

CANNABACEAE

Celtis laevigata Willd., Sugarberry, throughout oak-hickory forest near Kentucky Lake; F, 20 Jun 2013, R.L. Thompson & J.R. Abbott 13-325 (BEREA, FLAS, MUR). The key features used for differentiating *Celtis laevigata* and *C. occidentalis* L., vary from author to author, e.g., Jones (2005), Whittimore (2013). Species circumscription, obviously, involves taxonomic judgment, and the treatment provided by Alan Whittimore in the *Flora of Missouri* seems to be the best for reflecting biological reality in the landscape. Thus, many of the plants traditionally seen as *C. occidentalis* at HBS are now understood to be *C. laevigata*.

CARYOPHYLLACEAE

‡*Sagina decumbens* (Elliott) Torrey & A. Gray, Trailing Pearlwort, wet lawn beside three 1200-gallon stock water tanks; S. Associates: *Callitriche terrestris*, *Centunculus minimus*, *Isolepis carinata*; 5 Jun 2013, R.L. Thompson & J.R. Abbott 13-261 (BEREA, MUR). Campbell and Medley (2012) mapped five counties for this often overlooked taxon; the USDA, NRCS (2014) mapped 10 Kentucky counties.

CELASTRACEAE

‡***Celastrus orbiculatus* Thunb., Oriental bittersweet, dry-oak-hickory forest ecotone at back of Resource Building, a severe threat invasive colonizer; R, 5 Jun 2012, R.L. Thompson 12-653 (BEREA); roadside edge of woods, S side of Emma Road W of junction with Wolfson Road, 28 Jun 2014, J.R. Abbott 26527 (FLAS).

CORNACEAE

†**Cornus kousa* F. Buerger ex Miq., Pagoda Dogwood, an introduced Asian tree persisting as an ornamental in lawn at the front of the Resource Building; R, 26 Jun 2013, R.L. Thompson & J.R. Abbott 13-253 (BEREA, MUR).

CYPERACEAE

‡*Carex crus-corvi* Shuttlew. ex Kunze, Crowfoot Sedge, emergent at Kentucky Lake shoreline east of Watersport Road; R. Associate: *Echinodorus cordifolius*; 27 Jun 2014, R.L. Thompson & J.R. Abbott 14-248 (BEREA, FLAS, MUR).

HYDROCHARITACEAE

‡***Hydrilla verticillata* (L.f.) Royle, Hydrilla, an Old World submergent in Kentucky Lake near HBS Boat Dock; R, 27 Jun 2013, R.L. Thompson & J.R. Abbott 13-341 (BEREA, MUR). Jones (2005) did not list *Hydrilla verticillata* as a current taxon for Kentucky. Campbell and Medley (2012) mapped only Jefferson and Trigg counties; USDA, NRCS (2014) noted Floyd, Jefferson, Johnson, Knott, and Trigg counties.

LENTIBULARIACEAE

‡*Utricularia gibba* L., Longspur Creeping Bladderwort, submergent in 14 year-old pond; I. Associate: *Potamogeton nodosus*; 27 Jun 2014, R.L. Thompson & J.R. Abbott 14-251 (BEREA, FLAS, MUR).

MAGNOLIACEAE

†*Magnolia grandiflora* L., Southern Magnolia, a planted native tree persisting as an ornamental in lawn circle near Main Building; R, 25 Jun 2013, R.L. Thompson & J.R. Abbott 13-252 (BEREA, MUR).

MAZACEAE

‡**Mazus pumilus* (Bernm. f.) Steenis, Japanese Mazus, near rail fence in front lawn of Main Building; R, 2 Jun 2013, R.L. Thompson & J.R. Abbott 13-257 (BEREA, MUR). We also documented this often passed over European taxon at the Land Between The Lakes as a distribution record for Lyon County at the Woodlands Nature Center, 19 Jun 2013, R.L. Thompson & J.R. Abbott 13-310 (BEREA). Campbell and Medley (2012) mapped Jefferson, Lewis, and McCracken counties; the USDA, NRCS (2014) listed Fayette, Henderson, Jefferson, Lewis, and McCracken counties.

MORACEAE

‡**Fatoua villosa* (Thunb.) Nakai, Mulberry Weed, wet gravel floor inside of Greenhouse Building; O, 5 Jun 2012, R.L. Thompson 12-656 (BEREA); 2 Jun 2013, R.L. Thompson & J.R. Abbott 13-251 (BEREA, FLAS, MUR). Campbell and Medley (2012) mapped six Kentucky counties mainly from voucher specimens reported by Vincent (2004). The USDA, NRCS (2014) mapped seven Kentucky counties.

OPHIOGLOSSACEAE

Ophioglossum pycnostichum (Fern.) A. & D. Löve, Southern Adder's-tongue, 22 plants (6 fertile) found along an off-trail mesic drainage area below Dry-Mesic Oak-Hickory Forest. Associates: *Botrychium dissectum*, *Carex grayi*, *Chasmanthium latifolium*, *Dioscorea villosa*, *Polystichum acrostichoides*, *Trepocarpus aethusae*; I, 5 Jun 2015, J.R. Abbott 26814 (BEREA). Woods and Fuller (1988) first reported this fern from Calloway County based on Hunter 803 (MUR).

OXALIDACEAE

Oxalis dillenii Jacq., Southern Yellow Wood Sorrel, scattered in mowed and unmowed lawn; O, 2 Jun 2013, R.L. Thompson & J.R. Abbott 13-361 (BEREA, MUR).

PAULOWNIACEAE

***Paulownia tomentosa* (Thunb.) Sieb. & Zucc. ex Steud., Chinese Empress Tree, along trail in oak-hickory forest ecotone, a recent Asian colonizer at HBS; S, 20 Jun 2013, R.L. Thompson & J.R. Abbott 13-328 (BEREA, MUR); 27 Jun 2014, R.L. Thompson & J.R. Abbott 14-253 (BEREA). One sapling in a large water tank (dried out with terrestrial vegetation) and two seedlings were in gravel adjacent to the Resources Building, 13 Jun 2014, J.R. Abbott 26480 (FLAS).

POACEAE

Dichanthelium scoparium (Lam.) Gould, Velvety Panic Grass, seasonally wet ditch at Emma Drive east of entrance gate; S, 5 Jun 2012, R.L. Thompson 12-654 (BEREA); 25 Jun 2012, R.L. Thompson & J.R. Abbott 12-791 (BEREA, MUR).

‡**Vulpia myuros*(L.) C.C. Gmel, Rat-tail Fescue, gravel along roadside and around stock water tanks on W side of Greenhouse Building, S. Associates: *Acalypha rhomboidea*, *Conyza canadensis*, *Euphorbia maculata*; 12 Jun 2015, R.L. Thompson & J.R. Abbott 15-403 (BEREA). A naturalized European annual reported in six Kentucky counties by Campbell and Medley (2012) and USDA, NRCS (2014).

POTAMOGETONACEAE

‡*Potamogeton nodosus* Poiret, Leafy Pondweed, floating-leaved aquatic in 14 year-old pond; F. Associate: *Utricularia gibba*; 25 Jun 2012, R.L. Thompson & J.R. Abbott 12-815 (BEREA, MUR); 27 Jun 2014, R.L. Thompson & J.R. Abbott 14-250 (BEREA, FLAS).

PRIMULACEAE

‡*Centunculus minimus* L., Chaffweed, wet lawn beside three 1200 gallon stock water tanks; O, 5 Jun 2013, R.L. Thompson & J.R. Abbott 13-260 (BEREA, MUR). Abbott et al. (2001) documented the first Kentucky collection in Madison County [R.L. Thompson & J.R. Abbott 95-374 (BEREA)] since 1840 [*Short s.n.* (PH)] in Muhlenberg County. Campbell and Medley (2012) also mapped Harlan County. The USDA, NRCS (2014) listed Harlan, Madison, and Muhlenberg counties.

‡***Lysimachia nummularia* L., Moneywort, Kentucky Lake shoreline; O, 20 Jun 2013, R.L. Thompson & J.R. Abbott 13-327 (BEREA, MUR).

VISCACEAE

Phoradendron leucarpum (Raf.) Rev. & Johnst. ssp. *leucarpum*, American Mistletoe, a single clump hemiparasitic in *Ulmus alata* diagonally from Wolfson Drive off Emma Drive, a new host tree for Calloway County; R, 30 Mar 2013, R.L. Thompson & W.W. Overbeck 13-20 (BEREA, MUR). Thompson and McKinney (1990) first reported *Ulmus alata* as a mistletoe host tree for Kentucky in Lyon and Trigg counties at Land Between The Lakes. Thompson (2007) previously documented mistletoe on *Carya glabra* in dry oak-hickory forest at HBS [13 Oct 2006, R.L. Thompson & M.K. Graves 06-757 (BEREA, MUR)]. Campbell and Medley (2012) mapped mistletoe for Calloway County based upon the above 2006 collection.

VITACEAE

Vitis vulpina L., Frost Grape, in an oak-hickory woodland ecotone; I, 27 Jun 2014, R.L. Thompson & J.R. Abbott 14-252 (BEREA, MUR); also in shrub thicket at woodland edge W of the Mesocosm Building and observed at three other scattered woodland sites, 4 Jun 2014, J.R. Abbott 26470 (FLAS).

We documented an additional 21 vascular plant species, 11 genera, and five families for the flora of Hancock Biological Station. These 21 species (12 native and 9 non-native) comprise 13 new distribution records for Calloway County. Five are listed as Kentucky state-listed invasive plants by the KY-EPPC (2013). The 594 taxa account for 58.3% of the 1018 species listed by Woods and Fuller (1988) for the flora of Calloway County.

The documented vascular plants of the Hancock Biological Station now consist of 594 plant species, 345 genera, and 126 families. These 594 taxa account for nearly 23% of the 2600 recorded by Jones (2005) for the Commonwealth of Kentucky. Concentrated collecting still needs to be conducted for additional vascular plants in western Kentucky as 13 of 21 taxa were new Calloway County distribution records.

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