ADDITIONS TO THE FLORA OF CLEVELAND COUNTY, ARKANSAS: COLLECTIONS FROM MORO BOTTOMS NATURAL AREA, A STATE-PROTECTED OLD-GROWTH BOTTOMLAND HARDWOOD FOREST

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ABSTRACT

An annotated list of 38 additions to the vascular flora of Cleveland County, Arkansas is presented. Theadditionspresentedwerecollectedfrom Moro Bottoms Natural Area,astate-protectedold-growth bottomland hardwood forest located in the northwest region of the county.

RESUMEN

Se presenta una lista comentada de 38 adiciones a la flora vascular de Cleveland County, Arkansas. Las adiciones presentadas se recolectaron en Moro Bottoms Natural Area, un bosque pantanoso viejo protegido por el estado. ubicado en la parte noroeste del municipio.

This paper reports 38 additions to the vascular flora of Cleveland County, Arkansas. Collections were taken from windthrow gaps[2] areas within Moro Bottoms Natural Area, a 40 ha old growth bottomland hardwood forest located in the northwestern portion of Cleveland County. The area rests on the floodplain of Moro Creek, a tributary of the Ouachita River, approximately 48 km/30 mi upstream from the mouth of Moro Creek (Peacock 1983). Moro Bottoms supports a diverse stream-bottom community dominated by numerous bottomland oaks (*Quercus spp.*), sweetgum (*Liquidambar styraciflua* L.), bald cypress (*Taxodium* distichum (L.) Richard), and several hickories (*Carya* spp.). The study area and most of Cleveland County reside in the west gulf coastal plain physiographic region of Arkansas. Moro Bottoms is an excellent example of a mature stream-bottom forest becoming old growth through gap regeneration (Devall et al. 2001). The stand contains many old growth features, including little to no

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[2]A severe thunderstorm swept across the Moro Bottoms tract during the summer of 1989, downing trees and creating large openings in the forest canopy commonly referred to as windthrow gaps.

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evidence of human-induced disturbance and numerous large diameter trees. Devall et al. (2001) reported cherrybark oak (*Quercus* pagoda Raf.) and sweetgum to have diameters at breast height up to 149 cm/59 in. Additionally, a sample of larger red oaks and white oaks were determined to be approximately 150 years and 250 years of age, respectively (Guldin et al. 1995). Presently Moro Bottoms and adjacent areas are owned and protected by the Arkansas Natural Heritage Commission and the Arkansas Nature Conservancy. The land was purchased from Georgia Pacific Corporation in 1986.

Collecting of specimens was initiated in the spring of 1990 and continued seasonally through the fall of 1992. A more detailed description of sampling methods is discussed in Devall et al. (2001). Collecting efforts and identifications were performed by the authors; some material presented includes collections made by E. Sundell. Specimens are housed in the herbarium collection at the U.S. Forest Service, Southern Hardwoods Laboratory [SHL] (432 Stoneville Road, Stoneville, MS 38776), with some duplicates and voucher material deposited in the University of Arkansas-Monticello Herbarium [UAM]. Smith (1988) and The PLANTS Database (USDA Natural Resources Conservation Service 2002) were consulted to verify the undocumented occurrence of species within Cleveland County we present.

The following annotated list is arranged alphabetically by family, and then by genus and species. Generalized species and habitat descriptions, supplemental to the description of the study area discussed above, cite Radford et al. (1968) and Godfrey and Wooten (1979 and 1981); range data within the state of Arkansas are taken from Smiths (1988) *Atlas*. Collector, number and herbaria of deposit are listed last. Accession numbers are given for those specimens housed in the SHL herbarium.

ARISTOLOCHIACEAE

Aristolochia serpentaria L.-Small herb of bottomland forests and woodland margins; Smith (1988) reports this species for 24 Arkansas counties, mostly in the western half of the state, it is however listed for neighboring Bradley and Drew counties in southeastern Arkansas; *Sundell* 9136 (UAM).

ASCLEPIADACEAE

Asclepias perennis Walter-A common herb of alluvial forest, usually in low lying areas on heavy clays; reported in Smith (1988) for most eastern counties bordering the Mississippi River and inland into the coastal plain region of the state; present in neighboring Bradley, Dallas, Drew and Lincoln counties; *Devall s.n.* (SHL: 710).

ASTERACEAE

Brickellia eupatorioides (L) Shinners-Disturbed woodland sites and thickets;a suprising find for Cleveland County, listed by Smith (1988) in western Arkansas counties of quite different physiography than the coastal plain soils of Cleveland County; *Devall s.n.* (SHL: 758).

Eupatorium hyssopifolium L-A weedy plant of woodland borders and openings, probably seeded in from adjacent upland mixed pine hardwood stands where it would be more common; only reported by Smith (1988) in four Arkansas counties: Jefferson, Lincoln, Bradley, and Calhoun; *Deval s.n.* (SHL: 738).

Mikania scandens (L) Willd.—A perennial climbing vine usually associated with disturbed areas and margins of stream-bottom forests,

wet woods; Widespread across southern Arkansas and up the Mississippi River border counties (Smith 1988); *Devall s.n.* (SHL: 718), *Sundell* 9129 (UAM).

CALLITRICHACEAE

Callitriche heterophylla Pursh-Aquatic herb of ditches, shallow depressions, and standing water; widespread, occurring in several Arkansas counties including neighboring Bradleyand Drew counties; *Devall s.n.* (SHL:933).

CORNACEAE

Cornus stricta Lam.-Small understory tree of bottomland hardwood forests, usually occurring on heavier textured soils than other dogwoods found in the bottoms; listed in Smith (1988) as *C. foemino,* this species is found in most Arkansas counties, excluding those in the Ozarks, also reported for all counties contiguous to Cleveland County; *Devall s.n.* (SHL: 704,745).

CRASSULACEAE

Penthorum sedoides L-Rhizomatous herb common to wet depressional areas,ditches and slough margins, heavy clay soils; widespread, found in several Arkansas counties, including neighboring Drew, Bradley, Calhoun, Dallas, Grant, and Jefferson counties (Smith 1988); *Devall s.n.* (SHL:703, 711), *Sundell* 9142 (UAM).

EUPHORBIACEAE

Acalypho virginico L.-Weedy annual of disturbed sites and openings,common;found in almost every county in the state (Smith 1988); *Devall s.n.* (SHL:767).

FABACEAE

Desmodium paniculatum (L.) DC. var. *dillenii* (Darl.) Isley-Woodland margins and openings; Smith (1988) reports this species for several Arkansas counties north and west of Cleveland County, but is reported for neighboring Bradley and Drew counties; *Sundell* 9134 (UAM).

Diocleo multiflora (Torrey & A.Gray) Mohr—Herbaceous vine common in disturbed woodland openings, alluvial forests; reported in 15 Arkansas counties by Smith (1988), mostly in the eastern and southern regions of the state; *Devall s.n.* (SHL: 748), *Sundell 9140* (UAM).

HYDROPHYLLACEAE

Hydroleo uniflora Raf.-Somewhat decumbent herb of wet ditches,swampy areas,and wet woods; Smith (1988) reports this species for several southern and central Arkansas counties, including neighboring Bradley, Drew, Calhoun, and Jefferson counties; *Devall s.n.* (SHL: 746,747).

HYPERICACEAE

Hypericum walteri J.G. Gmel.—Perennial herb of wet floodplain forests, often associated with cypress swamps and bogs; this species is reported in 15 Arkansas counties, mostly in the southern portion of the state; reported for neighboring Bradley, Dallas, and Jefferson counties (Smith *1988); Sundell* 9144 (UAM).

LAMIACEAE

Lycopus virginicus L.-Stoloniferous, running herb of bottomland forests, shaded ditchbanks and wet areas; Smith (1988) reports this species in several central counties across the state, as well as neighboring Jefferson, Lincoln, Drew, and Calhoun counties; *Deval s.n.* (SHL: 765).

ONAGRACEAE

Ludwigia palustris (L.) Ell.—Mat forming perennial common to swampy forests,pond margins, and exposed shallow depressions, somewhat invasive; scattered across the state in numerous counties; reported for neighboring Bradley and Drew counties (Smith 1988); *Devall s.n.* (SHL:709).

POLYGONACEAE

Brunnichia cirrhoso Banks ex Gaertn.-Invasive woody vine of woodland openings,margins, and disturbed sites; widespread across the state,with exception to the northwest counties of the Ozarks; Smith (1988) reports this species for all counties contiguous to Cleveland County; *Devall s.n.* (SHL:754).

RUBIACEAE

Oldenlandia boscii (DC.) Chapm.-Nearly prostrate perennial with linear, opposite leaves; alluvial forests, shallow depressions; very lim-

ited range in Arkansas, only reported for 13 counties in Smith's (1988) *Atlas*, including neighboring Bradley, Drew, and Dallas counties; *Devall s.n.* (SHL:698).

SAXIFRAGACEAE

Itea virginica L-Deciduous shrub of bottomland forests, particularly on minor bottom sites away from the Mississippi floodplain forests in the eastern part of the state; widely distributed across the state except in the upland counties of the northwest and those counties bordering the Mississippi River (Smith 1988); *Devall s.n.* (SHL: 755).

SCROPHULARIACEAE

Lindernia dubia (L) Pennell-Annual herb found along ditch edges and muddy flats bordering waterways, bottomtand forests and openings; occurring in almost every county in the state, including neighboring Drew, Bradley, Calhoun, Dallas, and Jefferson counties (Smith 1988); *Devall s.n.* (SHL:735), *Sundell* 9131, 9143 (UAM).

SOLANACEAE

Physalis pubescens L.-Weedy annual found in openings and disturbed sites; Smith's (1988) *Atlas* depicts a sporadic distribution across the state, but comments on its probable occurrence in all Arkansas counties; reported for neighboring Bradley county to the south; *Sundell* 9138 (UAM).

URTICACEAE

Boehmeria cylindrica (L.) Swam-Very common woodland herb of bottomland hardwood forests, shaded ditches and woodland-edge ecotones; found in nearly every Arkansas county, including neighboring Jefferson, Lincoln, Drew, Bradley, and Dallas counties (Smith 1988); *Devall s.n.* (SHL: 705,706).

VITACEAE

Vitis cinerea Engelm. ex. Millardet-Common woody vine of disturbed woodland sites and openings; leaves densely pubescent, somewhat aggressive in habit, restricted mostly to floodplain forest settings; Smith (1988) reports this species in several Arkansas counties across all physiographic regions of the state, including neighboring Jefferson, Lincoln, Drew, Bradley, and Dallas counties; *Devall s.n.* (SHL:757).

Vitis palmata Vahl—Climbing woody vine with glabrous leaves, common to bottomland forests and disturbed woodland openings; distribution in Arkansas appears limited, reported by Smith (1988) in 14 counties and for several other counties without vouchered material, mostly in the Mississippi River floodplain, the coastal plain, and Arkansas River valley counties; *Devall s.n.* (SHL:756).

CYPERACEAE

Carex caroliniana Schwein.—Cespitose perennial of floodplain forests and wet meadows and openings; perigynia somewhat inflated and round, tightly arranged in a compact spike, spikes usually 3; range restricted in Arkansas to 8 central and southern counties with unvouchered reports for several other eastern counties (Smith 1988); *Devall s.n.* (SHL: 751,752).

Corex *debilis* Michx.-Cespitose sedge of lowland woods, seepage areas and wet clearings; pistillate spikes loosely flowered (3-4), perigynia lanceolate tapering gradually to a beak; Smith (1988) reports this species in 13 counties mostly in the coastal plain counties of southern Arkansas including neighboring Grant, Jefferson, Lincoln, Drew, and Bradley counties; *Devall s.n.* (SHL: 729,730,731).

Corex festucoceo Schkuhr ex Willd.—Tufted perennial of bottomland hardwood forests and wet openings; little documentation of this species in Arkansas, Smith's (1988) Atlas reports only 2 counties where vouchered material has been presented; our record is among the first reports for this species presence in the southeastern region of the state; *Devall s.n.* (SHL:732).

Carex intumescens Rudge-Tufted perennial of alluvial forests, similar to the rhizomatus *C. louisianica*; pistillate spikes somewhat globose, loosely flowered, perigynia inflated gradually tapering to a beak; this species is well distributed across the southern half of the state, Smith (1988) reports this species in neighboring Lincoln, Drew, Bradley, and Dallas counties; *Devall s.n.* (SHL: 713).

Corex *reniformis* (Bailey) Small-Cespitose perennial common to alluvial forests and wet openings; pistillate spikes many flowered, ovoid, often tightly arranged terminally, perigynia orbicular, relatively flat, conspicuously winged; reported in Smith's (1988) Atlas for 10 Arkansas counties mostly in the southern half of the state including neighboring Drew, Bradley, and Calhoun counties; *Devall s.n.* (SHL: 766).

Corex *tribuloides* Wahlenb.-Abundantly common sedge of bottomland hardwood forests and low lying wet areas; pistillate spikes ovoid to obovoid, tightly arranged terminally, perigynia flat, narrowly ovate, winged apically; reported by Smith (1988) in 18 Arkansas counties mostly in the southern half of the state including neighboring Jefferson, Bradley, and Dallas counties. No doubt this species is present in all coastal plain and alluvial regions of the state; *Devall s.n.* (SHL:739, 740,741).

Corex typhino Michx.-Cespitose perennial found in alluvial woodlands; pistillate spikes erect, cylindrical, perigynia ovoid abruptly tapering to a short slender beak; this species is not well documented in Arkansas, reported by Smith (1988) in only 8 counties widely dispersed across the state; *Devall s.n.* (SHL: 762,763).

JUNCACEAE

Juncus coriaceus Mack.-Clumping, cespitose rush with inflorescence appearing lateral, common to swampy woods and depressions; this rush has a fairly limited range in Arkansas, reported by Smith (1988) in 11 counties all situated within the Ouachita mountains and coastal plain physiographic provinces of the state; *Devall s.n.* (SHL: 708).

POACEAE

Agrostis perennans (Walter)Tuck.-Tufted perennial grass of alluvial forests and wet clearings; Smith (1988) reports this species in several counties dispersed across the state including neighboring Jefferson and Bradley counties; *Sundell* 9126 (UAM).

Cinno *orundinaceo* L.-Rhizomatous perennial grass found in floodplain forests and on wet ditch banks; sporadic distribution across Arkansas, this species is found in 16 counties but with no discernable pattern depicting its range in the state. Smith (1988) reports this species for Bradley County to the south; *Sundell* 9145 (UAM).

Erianthus strictus Baldwin-Robust grass associated with swamp margins and ditches; spikelets conspicuously appressed; reported in Smith's (1988) *Atlas* in several southern Arkansas counties including Drew, Bradley, and Calhoun counties to the south; *Devall s.n.* (SHL: 742).

Leersia lenticularis Michx.—An often decumbent grass with distinctive lenticular florets arranged loosely in an open panicle; this species is associated with bottomland hardwood forests and other shaded swampy settings; appears to be undocumented for several Arkansas counties where it probably exists. Smith (1988) reports this plant in 12 counties mostly in the southern Mississippi River floodplain and coastal plain provinces of the state including neighboring Drew and Bradley counties; *Devall s.n.* (SHL:749), *Sundell* 9125 (UAM).

Leersia virginica Willd.—Slender, freely branching perennial grass common to alluvial woodlands and swamps; this species is reported by Smith (1988) in several Arkansas counties, primarily in the northern half of the state, but is also documented in a few southern counties as well, including neighboring Drew and Bradley counties; *Sundell* 9124 (UAM).

Ponicum dichotomum L.-Tufted perennial grass common to bottomland forests and wet clearings; Smith (1988) reports this plant essentially throughout the state, documented in neighboring Jefferson, Lincoln, Drew, Bradley, Dallas, and Grant counties; no doubt this species is present in Cleveland County; *Devall s.n.* (SHL: 715).

Ponicum rigidulum Nees-Abundantly common grass of floodplain forests and wet depressions; this species has a wide distribution, occurring in all physiographic regions of the state, reported in Smith's (1988) *Atlas* for neighboring Jefferson, Lincoln, Drew, Bradley, and Grant counties; *Devall s.n.* (SHL: 770, 771).

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