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# Additions to the Vascular Flora of the Red Slough Wildlife Management Area, McCurtain County, Oklahoma

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**ABSTRACT** The Red Slough Wildlife Management Area (7,800 ha) is located on the West Gulf Coastal Plain in southeastern Oklahoma. The inventory was motivated by land acquisitions and is intended to augment a 1999 inventory. We report an additional 202 taxa of vascular plants, with 186 species, 16 infraspecific taxa, 158 genera, and 68 families. This is a 62% increase in the number of taxa previously listed for the site. The largest families were the Poaceae (with 35 taxa), Asteraceae (20 taxa), and Fabaceae (18 taxa). Thirty-one nonnative taxa and 19 taxa tracked by the Oklahoma Natural Heritage Inventory were encountered.

**Key words:** Flora, inventory, Oklahoma, rare taxa, Upper Gulf Coastal Plain.

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**INTRODUCTION** In 1996, the United States Forest Service, in cooperation with the Natural Resources Conservation Service and the Oklahoma Department of Wildlife Conservation, acquired 2,158 ha of fallow rice fields and secondary bottomland forests in McCurtain County, Oklahoma, and initiated an ambitious wetland restoration project (United States Forest Service 2015). The site was named the Red Slough Wildlife Management Area (RSWMA), and Hoagland and Johnson were contracted in March 1999 to inventory the vascular flora, an effort that reported 343 taxa in 90 families (Hoagland and Johnson 2004, Table 1). In the decade since the primary acquisition, 5,624 hectares have been added to the RSWMA (Beagles 2015), and a successful wetland management program has created a mosaic of forested and herbaceous wetlands that hosts over 300 species of resident and migratory birds, many unique to the state (United States Forest Service 2015). Given the increased size of RSWMA, the active management, and that a decade had elapsed since the initial inventory,

this project was undertaken to document previously unreported taxa of vascular plants.

**STUDY AREA** The RSWMA (94.616°W to 94.703°W, 33.725°N to 33.755°N; Figure 1) is located on the Dissected Coastal Plain province of Oklahoma (Curtis et al. 2008) in the Upper West Gulf Coastal Plain (Hunt 1974). The topography is nearly level and elevation ranges from 100.3 m to 104.2 m above sea level. The surface geology is predominantly Quaternary alluvial deposits consisting of silt, sand, clay, and gravels on floodplains and terraces of the Red River (Johnson 2008). Two soil associations occur at the RSWMA. The Kinta-Wrightsville association occurs on uplands and terraces along the Red River and consists of deep, nearly level, poorly drained loamy soils. The Pledger-Roebuck-Redlake Association is composed of deep, nearly level, moderately to poorly drained clayey floodplain soils (Reasoner 1974).

The RSWMA is located in the Subtropical Humid (Cf) climate zone (Trewartha 1968). Summers are warm (mean July temperature 26.9°C) and humid, and winters are relatively short and mild (mean January temperature 4.0°C). Mean annual precipitation is 136 cm

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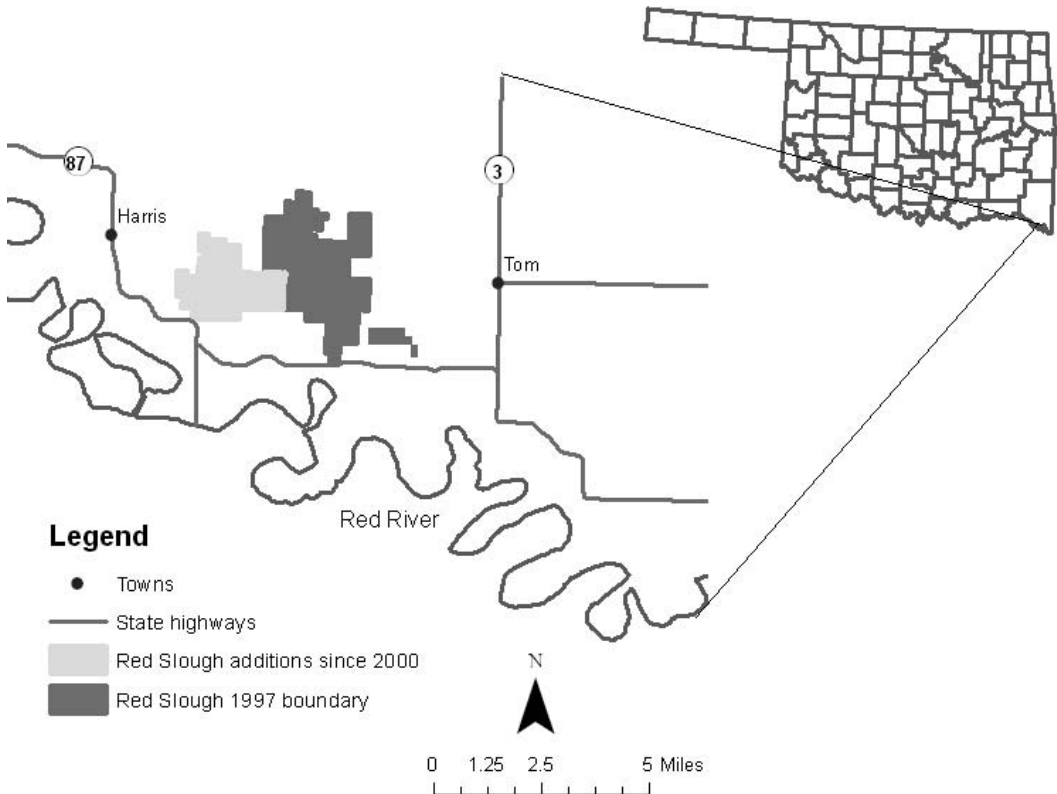
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**Table 1. Summary of collections from the Red Slough Wildlife Management Area, McCurtain County, Oklahoma. Presented are totals from 1999 (Hoagland and Johnson 2004), the present study, and a list generated by combining the two studies. Format follows Palmer and Richardson (2012). Tracked taxa are rare species monitored by the Oklahoma Natural Heritage Inventory. Exotic taxa are those non-native to North America, excluding cultivated and ornamental plants.**

Classification	Number of Taxa		
	Combined	1999	2010
Families	115	90	68
Genera	324	227	158
Species	526	340	186
Intraspecific taxa	19	3	16
Tracked taxa	34	15	19
Exotic taxa	53	24	31
Perennials	385	256	133
Annuals	153	79	67
Biennials	5	8	2

(Oklahoma Climatological Survey 2015). Potential natural vegetation is bottomland forest (Duck and Fletcher 1943), in which *Quercus lyrata* Walter, *Quercus nigra* L., and *Quercus phellos* L. are the predominant canopy species (Hoagland 2000). These forests were cleared in the mid-19th century for agricultural production, including rice cultivation (Beagles 2015). Secondary growth forest, old fields, man-made lakes, and wetlands now predominate throughout the study area.

**METHODS** Vouchers of vascular plants were made throughout the growing season (March to October) of 2010. Vouchers were made only for taxa not collected during the 1999 survey. Vouchers for exotic taxa were made from naturalized populations only, thus excluding cultivated and ornamental plants. Specimens were processed and deposited at the Robert Bebb Herbarium (OKL) at the University of Oklahoma following standard procedures. Manuals used for specimen identification included Smith (1994) and Tyrrel et al. (2010).



**Figure 1.** Location of the Red Slough Wildlife Management Area, McCurtain County, Oklahoma.

**Table 2. Taxa tracked by the Oklahoma Natural Heritage Inventory that occur at the Red Slough Wildlife Management Area. Taxa are ranked according to level of imperilment at the subnational (S) and global (G) levels on a scale of 1 to 5: 1 represents a taxon that is imperiled, and 5 represents a taxon that is secure. Q = questionable or unresolved taxonomy, T = indicates infraspecific taxa (Groves et al. 1995).**

Taxon	Family	G Rank	S Rank
<i>Acmella repens</i>	Asteraceae	G5	S1
<i>Aeschynomene indica</i>	Fabaceae	G5	S1
<i>Axonopus furcatus</i>	Poaceae	G5	S1
<i>Carya myristiciformis</i>	Juglandaceae	G4	S1
<i>Euploca procumbens</i>	Heliotropiaceae	G5	S1
<i>Euthamia leptocepala</i>	Asteraceae	G5	S1
<i>Heteranthera multiflora</i>	Pontederiaceae	G4	S1
<i>Hypericum lobocarpum</i>	Hypericaceae	G4Q	S1
<i>Leptochloa panicoides</i>	Poaceae	G5	S1
<i>Limnobiium spongia</i>	Hydrocharitaceae	G4	S1
<i>Morella cerifera</i>	Myricaceae	G5	S1
<i>Persicaria glabra</i>	Polygonaceae	G5	S1
<i>Physostegia intermedia</i>	Lamiaceae	G5	S1
<i>Saccharum giganteum</i>	Poaceae	G5	S1
<i>Spiranthes odorata</i>	Orchidaceae	G5	S1
<i>Spiranthes praecox</i>	Orchidaceae	G5	S1
<i>Symphotrichum dumosum</i> var. <i>dumosum</i>	Asteraceae	G5T3T5	S3
<i>Thalia dealbata</i>	Marantaceae	G4	S3
<i>Tipularia discolor</i>	Orchidaceae	G4G5	S2

Identifications were verified by comparison with collections from the Robert Bebb Herbarium. Origin, either native or introduced to North America, was determined using the PLANTS Database (USDA-NRSC 2015) and Taylor and Taylor (1991). Nomenclature follows the Integrated Taxonomic Information System (ITIS 2015) and Angiosperm Phylogeny Group III (Stevens 2001 and onward), and author names follow the International Plant Names Index (IPNI 2015). The resulting list was compared to Sorrie and Weakley (2001) to identify coastal plain endemics.

**RESULTS AND DISCUSSION** We collected 202 taxa of vascular plants in 158 genera and 68 families previously unreported from RSWMA (Table 1, Appendix 1), representing a 62.3% increase

from Hoagland and Johnson (2004). Families contributing the greatest number of new taxa were Poaceae (35 taxa), Asteraceae (20 taxa), and Fabaceae (18 taxa). Thirty-one new nonnative taxa were collected in this study, surpassing the 24 reported in 1999. The Poaceae and the Fabaceae had the most nonnative species (nine and eight, respectively). Perennial taxa (66%) predominated the flora, followed by annuals (33%) and biennials (1%). Nineteen taxa were encountered that are currently tracked by the Oklahoma Natural Heritage Inventory (Oklahoma Natural Heritage Inventory 2014; Table 2), compared to 15 in 1999 (Table 1).

Nine species occurred in four of the coastal plain endemic categories of Sorrie and Weakley (2001); six species were “widespread, including the Mississippi embayment” (pg. 62) (*Brunnichia ovata* (Walter) Shinnery, *Crataegus marshallii* Ettl., *Hydrolea ovata* Nutt., *Planera aquatica* G.F. Gmel., *Thalia dealbata* Fraser ex Roscoe, and *Trepocarpus aethusae* Nutt. ex DC.), one “widespread, disjunct to central Tennessee and/or Kentucky” (pg. 63) (*Chasmanthium laxum* (L.) H.O. Yates), one “West Gulf Coastal Plain” (pg. 66) (*Sagittaria papillosa* Buchenau), and one “widespread, disjunct to western Cuba” (pg. 66) (*Axonopus furcatus* (Flüggé) Hitchc.).

Four habitats were identified at RSWMA (Hoagland 2000):

1. *Quercus nigra* L.–*Quercus phellos* L./*Carpinus caroliniana* Walter forest association (QNQP)

The QNQP is the most extensive forest type at RSWMA, all occurrences of which were second-growth. These forest stands consist of small patches in a matrix of old fields and moist soil management units. Associated taxa include *Crataegus marshallii* Ettl., *Ilex decidua* Walter, *Sabal minor* (Jacq.) Pers., and *Ulmus rubra* Muhl.

2. *Quercus alba* L.–*Carya tomentosa* (Lam.) Nutt. forest association (QACA)

The QACA forest association is also found in small patches on the RSWMA. Associated taxa include *Acer rubrum* L., *Cornus florida* L., *Crataegus spathulata* Michx., *Lindera benzoin* (L.) Blume, *Carpinus caroliniana* Walter, and *Quercus falcata* Michx.

3. Herbaceous wetland vegetation (WETL)

Several WETL associations were present at RSWMA. However, since they are so heavily

intergraded, all were subsumed into one category. Examples of the *Typha latifolia* L. herbaceous association and the *Ludwigia peploides* (Kunth) P.H. Raven–*Persicaria hydropiperoides* (Michx.) Small herbaceous associations predominate. Common wetland taxa include *Cephalanthus occidentalis* L., *Hibiscus laevis* All., *Juncus effusus* L., *Nelumbo lutea* Willd., *Persicaria amphibia* (L.) Delarbre, *Sagittaria graminea* Michx., and *Salix nigra* Marshall.

#### 4. Disturbed areas and old field vegetation (DAOF)

The DAOF consist of parking areas, mowed lawns, roadsides, and other sites exhibiting signs of physical disruption. Common plants in disturbed areas include *Ambrosia artemisiifolia* L., *A. trifida* L., *Andropogon virginicus* L., *Conyza Canadensis* (L.) Cronq., *Daucus pusillus* Michx., *Digitaria ciliaris* (Retz.) Koeler, *Lespedeza cuneata* (Dum. Cours.) G. Don, *Melilotus officinalis* (L.) Lam., *Mollugo verticillata* L., *Rhus glabra* L., *Sorghum halepense* (L.) Pers., and *Trifolium dubium* Sibth.

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### LITERATURE CITED

- Beagles, R. 2015. Red Slough Wildlife Management Area. ([www.wildlifedepartment.com/facts\\_maps/wma/redslough.htm](http://www.wildlifedepartment.com/facts_maps/wma/redslough.htm), 13 February 2015). Oklahoma Department of Wildlife Conservation, Oklahoma City, Oklahoma 73111 USA.
- Curtis, N.M., W.E. Ham, and K.S. Johnson. 2008. Geomorphic provinces of Oklahoma. *In*: Johnson, K.S. and K.V. Luza (eds.). Earth sciences and mineral resources of Oklahoma. Oklahoma Geological Survey, Norman, Oklahoma.
- Duck, L.G. and J.B. Fletcher. 1943. A game type map of Oklahoma. A survey of the game and furbearing animals of Oklahoma. Oklahoma Department of Wildlife Conservation, Oklahoma City, Oklahoma.
- Groves, C.R., M.L. Klein, and T.F. Breden. 1995. Natural Heritage Programs: public-private partnerships for biodiversity conservation. *Wildlife Soc. Bull.* 23:784–790.
- Hoagland, B.W. 2000. The vegetation of Oklahoma: a classification of landscape mapping and conservation planning. *S. W. Naturalist* 45: 385–420.
- Hoagland, B.W. and F.L. Johnson. 2004. Vascular flora of Red Slough and Grassy Slough Wildlife Management Areas, Gulf Coastal Plain, McCurtain County, Oklahoma. *Castanea* 69: 284–296.
- Hunt, C.B. 1974. Natural regions of the United States and Canada. W.H. Freeman, San Francisco, California.
- Integrated Taxonomic Information System. 2012. ITIS: Integrated Taxonomic Information System (<http://www.itis.org>, 1 October 2015).
- International Plant Names Index. 2015. International Plant Names Index (<http://www.ipni.org>, 1 October 2015).
- Johnson, K.S. 2008. Generalized geologic map of Oklahoma. *In*: Johnson, K.S. and K.V. Luza (eds.). Earth sciences and mineral resources of Oklahoma. Oklahoma Geological Survey, Norman, Oklahoma.
- Oklahoma Climatological Survey. 2015. Oklahoma Climatological Data. ([climate.ok.gov/index.php/climate/climate\\_normals\\_by\\_county](http://climate.ok.gov/index.php/climate/climate_normals_by_county), 30 January 2015). University of Oklahoma, Norman, Oklahoma 73072 USA.
- Oklahoma Natural Heritage Inventory. 2014. Vascular Plant Tracking List. ([www.biosurvey.ou.edu/download/publications/NEWtrackinglist02212014.pdf](http://www.biosurvey.ou.edu/download/publications/NEWtrackinglist02212014.pdf), 30 January 2015). University of Oklahoma, Norman, Oklahoma 73019 USA.
- Palmer, M.W. and J.C. Richardson. 2012. Biodiversity data in the information age: do 21st century floras make the grade? *Castanea* 77: 46–59.
- Reasoner, R.C. 1974. Soil survey of McCurtain County, Oklahoma. United States Department of Agriculture, Washington, D.C.
- Smith, E.B. 1994. Keys to the flora of Arkansas. University of Arkansas Press, Fayetteville, Arkansas.
- Sorrie, B.A. and A.S. Weakley. 2001. Coastal plain vascular plant endemics: phytogeographic patterns. *Castanea* 66:50–82.
- Stevens, P.F. (2001 and onward). Angiosperm Phylogeny Website. Version 12, July 2012.

- (www.mobot.org/MOBOT/research/APweb, 1 January 2015). Missouri Botanical Gardens, St. Louis, Missouri 63110 USA.
- Taylor R.J. and C.E. Taylor. 1991. An annotated list of the ferns, fern allies, gymnosperms, and flowering plants of Oklahoma, 2nd ed. Biology Department Herbarium, Southeastern Oklahoma State University, Durant, Oklahoma.
- Trewartha, G.T. 1968. An introduction to climate. McGraw-Hill, New York, New York.
- Tyrl, R.J., S.C. Barber, P. Buck, W.J. Elisens, J.R. Estes, P. Folley, L.K. Magrath, C.L. Murray, A.K. Ryburn, B.A. Smith, C.E.S. Taylor, R.A. Thompsom, J.B. Walker, and L.E. Watson. 2010. Keys and Descriptions for the Vascular Plants of Oklahoma. Flora Oklahoma Incorporated, Noble, Oklahoma.
- United States Forest Service. 2015. Red Slough Wildlife Management Area. ([http://www.fs.usda.gov/detail/ouachita/landmanagement/?cid=fsm9\\_039773](http://www.fs.usda.gov/detail/ouachita/landmanagement/?cid=fsm9_039773), 15 December 2015). Ouachita National Forest, Hot Springs, Arkansas 71902 USA.
- USDA, NRCS. 2015. The PLANTS Database (<http://plants.usda.gov>, 1 January 2015). National Plant Data Team, Greensboro, North Carolina 27401-4901 USA.
- APPENDIX 1** Annotated list of vascular plant taxa collected during a 2010 resurvey of the Red Slough Wildlife Management Area, McCurtain County, Oklahoma. Each entry includes life history (A = annual, B = biennial, P = perennial), growth form (F = forb, G = graminoid, S = shrub, T = tree), habitat(s) of occurrence (QNQP = *Quercus nigra*–*Quercus phellos*/*Carpinus caroliniana* forest association, QACA = *Quercus alba*–*Carya alba* forest association, WETL = herbaceous wetland vegetation, DAOF = disturbed area/old field), collection number, and unit from which the voucher was collected. Introduced taxa are denoted with an asterisk (\*) and taxa tracked by the Oklahoma Natural Heritage Inventory are denoted with a dagger (†).
- ALISMATACEAE
- Sagittaria graminea* Michx. ssp. *graminea* – P; F; WETL; RS-072; Unit 9
- Sagittaria montevidensis* Cham & Schlecht. ssp. *calycina* (Engelm.) Bogin – P; F; WETL; RS-224; Unit 30E
- Sagittaria papillosa* Buchenau – P; F; WETL; RS-278; Unit 26
- AMARYLLIDACEAE
- Hymenocallis lirtosme* (Raf.) Shinnery – P; F; QNQP; RS-044; Unit 15
- ANACARDIACEAE
- Toxicodendron pubescens* Mill. – P; S; DAOF, QACA; RS-279; Unit 20
- APIACEAE
- \**Daucus carota* L. – B; F; DAOF; RS-036; Unit 11
- Eryngium yuccifolium* Michx. – P; F; DAOF; RS-114; Unit 34
- Ptilimnium nuttallii* (DC.) Britton – A; F; DAOF; RS-129; Unit 19
- Sanicula canadensis* L. – B; F; QACA; RS-061; Unit 9
- \**Torilis arvensis* (Huds.) Link – A; F; DAOF; RS-060; Unit 31
- Tropocarpus aethusae* Nutt. ex DC. – A; F; DAOF; RS-106; Unit 9
- APOCYNACEAE
- Cynanchum leave* (Michx.) Pers. – P; F; DAOF; RS-178; Unit 4
- Apocynum cannabinum* L. – P; F; DAOF; RS-118; Unit 16W
- Asclepias tuberosa* L. – P; F; DAOF; RS-281; Unit 20
- ARACEAE
- Arisaema dracontium* (L.) Schott – P; F; QACA; one individual, no voucher collected; Unit 19
- ASPARAGACEAE
- Manfreda virginica* (L.) Salisb. ex Rose – P; S; QNAP; Unit 9
- Yucca arkansana* Trel. – P; S; DAOF; Unit 36
- Yucca louisianensis* Trel. – P; S; DAOF; RS-290; Unit 20
- ASPLENIACEAE
- Asplenium platyneuron* (L.) Britton, Sterns & Poggenb. – P; F; QACA; RS-081; Unit 9
- ASTERACEAE
- Achillea millefolium* L. – P; F; DAOF; Unit 9
- †*Acmella repens* (Walter) Rich. – P; F; WETL; RS-232; Unit 27A
- ACANTHACEAE
- Ruellia humilis* Nutt. – P; F; DAOF; RS-108; Unit 9
- ADOXACEAE
- Viburnum rufidulum* Raf. – P; S; QACA RS-082; Unit 9

- Ambrosia bidentata* Michx. – A; F; DAOF; RS-180; Unit 9  
*Baccharis halimifolia* L. – P; S; DAOF; RS-264; Unit 20  
*Bidens polylepis* S.F. Blake – A; F; WETL; RS-152; Unit 9  
*Bidens laevis* (L.) Britton, Sterns & Poggenb. – A; F; WETL; RS-251; Unit 21  
*Boltonia asteroides* (L.) L'Hér. – P; F; WETL; RS-259; Unit 29  
*Erechtites hieraciifolius* (L.) Raf. ex DC. var. *hieraciifolius* – A; F; QACA; RS-253; Unit 19  
*Erigeron strigosus* Muhl. ex Willd. var. *septentrionalis* (Fernald & Wiegand) Fernald – A; F; DAOF; RS-043; Unit 6  
*Eupatorium perfoliatum* L. – P; F; DAOF; RS-187; Unit 20  
*Eupatorium serotinum* Michx. – P; F; DAOF; RS-197; Unit 6  
†*Euthamia leptoccephala* (Torr. & A. Gray) Greene ex Porter & Britton – P; F; DAOF; RS-257; Unit 40N  
*Helianthus angustifolius* L. – P; F; DAOF; RS-265; Unit 20  
*Heterotheca subaxillaris* (Lam.) Britton & Rusby ssp. *latifolia* (Buckley) Semple – A; F; DAOF; RS-177; Unit 20  
*Lactuca canadensis* L. – A; F; DAOF; RS-149; Unit 10  
*Silphium integrifolium* Michx. – P; F; DAOF; RS-137; Unit 27B  
†*Symphytotrichum dumosum* (L.) G.L. Nesom var. *dumosum* – P; F; WETL; RS-262; Unit 20  
*Symphytotrichum lanceolatum* (Willd.) G.L. Nesom ssp. *lanceolatum* – P; F; DAOF; RS-247; Unit 19  
*Symphytotrichum praealtum* (Poir.) G.L. Nesom – P; F; DAOF; RS-256; Unit 33  
*Verbesina helianthoides* Michx. – P; F; DAOF; RS-256; Unit 19

## BETULACEAE

- Betula nigra* L. – P; T; QNQP; RS-027; Unit 35

## BLECHNACEAE

- Woodwardia areolata* (L.) T. Moore – P; F; QNQP; Unit 9

## BRASSICACEAE

- Lepidium densiflorum* Schrad. – A; F; DAOF; RS-145; Bittern Lake  
*Lepidium virginicum* L. ssp. *virginicum* – A; F; DAOF; RS-090; Unit 16W  
*Rorippa palustris* (L.) Besser ssp. *fernaldiana* (Butters & Abbe) Jonsell – A; F; WETL; RS-010; Unit 7

## CACTACEAE

- Opuntia macrorhiza* Engelm. – P; S; DAOF; RS-255; Unit 4

## CAMPANULACEAE

- Lobelia cardinalis* L. – P; F; WETL; Unit 9  
*Lobelia puberula* Michx. – P; F; DAOF; RS-206; Unit 20

## CARYOPHYLLACEAE

- \**Cerastium glomeratum* Thuill. – A; F; DAOF; RS-014; Unit 6  
*Sagina decumbens* (Elliott) Torr. & A. Gray – A; F; DAOF; RS-031; Unit 39

## CERATOPHYLLACEAE

- Ceratophyllum demersum* L. – P; F; WETL; RS-168; Unit 15

## COMMELINACEAE

- Commelina virginica* L. – P; F; DAOF; RS-215; Unit 9  
*Tradescantia occidentalis* (Britton) Smyth var. *occidentalis* – P; F; DAOF; RS-035; Unit 6  
*Tradescantia ohiensis* Raf. – P; F; DAOF; RS-088; Unit 9

## CONVOLVULACEAE

- Dichondra carolinensis* Michx. – P; F; DAOF; RS-217; Unit 9  
\**Ipomoea hederacea* Jacq. – A; F; DAOF; RS-225; Unit 30W  
*Ipomoea lacunosa* L. – A; F; DAOF; RS-212; Unit 10  
*Ipomoea pandurata* (L.) G. Mey. – P; F; DAOF; RS-123; Unit 14

## CYPERACEAE

- Cyperus odoratus* L. – A; G; DAOF; RS-243; Unit 38  
*Eleocharis lanceolata* Fernald – A; G; WETL; RS-076; Unit 9  
*Eleocharis quadrangulata* (Michx.) Roem. & Schult. – P; G; WETL; RS-186; Unit 40N  
*Fimbristylis vahlii* (Lam.) Link – A; G; WETL; RS-175; Unit 31  
*Rhynchospora glomerata* (L.) Vahl – P; G; WETL; RS-136; Unit 19  
*Scirpus cyperinus* (L.) Kunth – P; G; WETL; RS-125; Unit 5

## EQUISETACEAE

- Equisetum laevigatum* A. Br. – P; F; WETL; RS-237; Unit 58

## ERICACEAE

- Monotropa uniflora* L. – P; F; QACA; RS-287; Unit 9

## EUPHORBIACEAE

- Acalypha gracilens* A. Gray – A; F; DAOF; RS-134; Unit 19  
*Croton glandulosus* L. – A; F; DAOF; RS-102; Unit 9

*Croton monanthogynus* Michx. – A; F; DAOF; RS-160;  
Unit 9

## FABACEAE

†*Aeschynomene indica* L. – P; F; DAOF; RS-204; Unit  
40N

*Centrosema virginianum* (L.) Benth. – P; F; DAOF;  
RS-284; Unit 20

*Desmodium paniculatum* (L.) DC. var. *paniculatum* –  
P; F; QACA; RS-209; Unit 8

\**Kummerowia striata* (Thunb.) Schindl. – A; F;  
DAOF; RS-205; Unit 20

\**Lespedeza cuneata* (Dum. Cours.) G. Don – P; F;  
DAOF; RS-120; Unit 34

*Lespedeza repens* (L.) W.P.C. Barton – P; F; QACA; RS-  
234; Unit 27A

*Lespedeza virginica* (L.) Britton – P; F; DAOF; RS-214;  
Unit 9

\**Medicago polymorpha* L. – P; F; DAOF; RS-021; Unit  
16W

\**Securigera varia* (L.) Lassen – P; F; DAOF; RS-277;  
Bittern Lake

*Senna marilandica* (L.) Link – P; F; WETL; RS-190;  
Unit 44

*Strophostyles helvola* (L.) Elliott – A; F; DAOF; RS-192;  
Unit 9

*Strophostyles leiosperma* (Torr. & A. Gray) Piper – A;  
F; DAOF; RS-181; Unit 9

\**Trifolium campestre* Schreb. – A; F; DAOF; RS-037;  
Unit 8

\**Trifolium incarnatum* L. – A; F; DAOF; RS-065; Unit  
9

*Trifolium reflexum* L. – A; F; DAOF; RS-077; Unit 9

*Vicia minutiflora* D. Dietr. – A; F; DAOF; RS-094; Unit  
35

\**Vicia sativa* L. – A; F; DAOF; RS-005; Unit 4

\**Wisteria floribunda* (Willd.) DC. – P; V; DAOF; RS-  
009; Unit 9

## FAGACEAE

*Quercus marilandica* Münchh. – P; T; QACA; RS-068;  
Unit 9

*Quercus palustris* Münchh. – P; T; QNQP; RS-041; Unit  
11

*Quercus stellata* Wangenh. – P; T; QACA; RS-074; Unit  
9

## GERANIACEAE

\**Geranium dissectum* L. – A; F; DAOF; RS-023; Bittern  
Lake

## HALORAGACEAE

*Myriophyllum heterophyllum* Michx. – P; F; WETL;  
RS-272; Unit 27a

## HELIOGROTIACEAE

†*Euploca procumbens* (Mill.) Diane & Hilger – P; F;  
DAOF; Unit 44

\**Heliotropium indicum* L. – A; F; WETL; RS-127; Unit  
30E

## HYDROCHARITACEAE

†*Limnobium spongia* (Bosc) Rich. ex Steud. – P; F;  
WETL; RS-239; Unit 27A

## HYDROLEACEAE

*Hydrolea uniflora* Raf. – P; F; WETL; RS-113; Bittern  
Lake

## HYPERICACEAE

*Hypericum gymnanthum* Englem. & A. Gray – P; F;  
DAOF; RS-157; Unit 9

†*Hypericum lobocarpum* Gatt. ex J.M. Coult. – P; S;  
DAOF; RS-283; Unit 20

## JUGLANDACEAE

†*Carya myristiciformis* (F. Michx.) Elliott – P; T;  
QACA; RS-241; Unit 8

*Juglans nigra* L. – P; T; QACA; Unit 9

## JUNCACEAE

*Juncus acuminatus* Michx. – P; G; WETL; RS-040;  
Unit 8

*Juncus bufonius* L. – A; G; WETL; RS-029; Unit 39

## LAMIACEAE

*Hedeoma hispida* Pursh – A; F; DAOF; RS-067; Unit 9

\**Lamium amplexicaule* L. – A; F; DAOF; RS-034; Unit  
11

*Lycopus rubellus* Moench – P; F; WETL; RS-233; Unit  
27A

*Monarda russeliana* Nutt. ex Sims – P; F; DAOF; RS-  
059; Teal Lake

†*Physostegia intermedia* (Nutt.) Engelm. & A. Gray –  
P; F; WETL; RS-046; Unit 4

*Teucrium canadense* L. – P; F; DAOF; RS-111; Unit 11

## LENTIBULARIACEAE

*Utricularia gibba* L. – P; F; WETL; RS-054; Otter Lake

## LILIACEAE

*Erythronium rostratum* W. Wolf – P; F; QACA; RS-  
092; Unit 35

## LYTHRACEAE

\**Lagerstroemia indica* L. – P; S; DAOF; RS-288; Unit 9

## MALVACEAE

*Hibiscus laevis* All. – P; F; WETL; RS-126; Unit 7

*Sida spinosa* L. – A; F; DAOF; RS-191; Unit 5

*Tilia americana* L. – P; T; QACA; RS-093; Unit 35



## MARANTACEAE

†*Thalia dealbata* Fraser ex Roscoe – P; F; WETL; RS-057; Unit 30E

## MOLLUGINACEAE

*Mollugo verticillata* L. – A; F; DAOFF; RS-116; Unit 19

## MORACEAE

*Maclura pomifera* (Raf.) C.K. Schneid. – P; T; DAOFF; RS-112; Unit 11

## MYRICACEAE

†*Morella cerifera* (L.) Small – P; S; DAOFF; RS-229; Unit 25

## NELUMBONACEAE

*Nelumbo lutea* Willd. – P; F; WETL; RS-115; Bittern Lake

## NYMPHAEACEAE

*Nymphaea odorata* Aiton ssp. *odorata* – P; F; WETL; RS-053; Otter Lake

## OLEACEAE

\**Ligustrum sinense* Lour. – P; S; DAOFF; RS-042; Unit 9

## ONAGRACEAE

*Ludwigia glandulosa* Walter – P; F; WETL; RS-133; Unit 19

*Ludwigia leptocarpa* (Nutt.) H. Hara – P; F; WETL; RS-144; Unit 27A

*Ludwigia palustris* (L.) Elliott – P; F; WETL; RS-193; Unit 9

*Ludwigia peploides* (Kunth) P.H. Raven – P; F; WETL; RS-122; Unit 7

*Oenothera curtiflora* W.L. Wagner & Hoch – A; F; DAOFF; RS-166; Unit 8

*Oenothera filiformis* (Small) W.L. Wagner & Hoch – A; F; DAOFF; RS-208; Unit 8

*Oenothera linifolia* Nutt. – A; F; DAOFF; RS-064; Unit 9

*Oenothera villosa* Thunb. – P; F; DAOFF; RS-207; Unit 20

## ORCHIDACEAE

*Spiranthes cernua* (L.) Rich. – P; F; DAOFF; RS-267; Unit 20

†*Spiranthes odorata* (Nutt.) Lindl. – P; F; QNQP; observed, no voucher collected; Unit 35

†*Spiranthes praecox* (Walter) S. Watson – P; F; QNQP; observed, no voucher collected; Unit 9

*Spiranthes tuberosa* Raf. – P; F; DAOFF; RS-289; Unit 9

†*Tipularia discolor* (Pursh) Nutt. – P; F; QACA; Unit 9

## OROBANCHACEAE

*Agalinis gattereri* (Small) Small – A; F; DAOFF; RS-230; Unit 20

*Agalinis heterophylla* (Nutt.) Small – A; F; DAOFF; RS-226; Unit 8

*Buchnera americana* L.; P; F; Arbour s.n.; Unit 20

*Castilleja indivisa* Engelm. – A; F; DAOFF; RS-003; Unit 9

## OSMUNDACEAE

*Osmunda regalis* L. – P; F; WETL; Unit 9

## PLANTAGINACEAE

*Mecardonia acuminata* (Walter) Small – P; F; DAOFF; RS-213; Unit 9

*Penstemon digitalis* Nutt. ex Sims – P; F; DAOFF; RS-066; Unit 9

*Plantago pusilla* Nutt. – A; F; DAOFF; RS-030; Unit 39

\**Veronica arvensis* L. – DAOFF; RS-033; A; F; Unit 11

## POACEAE

*Agrostis hyemalis* (Walter) Britton, Sterns & Poggenb. – P; G; WETL; RS-271; Unit 9

\**Aira elegantissima* Schur – A; G; DAOFF; RS-062; Unit 9

*Andropogon glomeratus* (Walter) Britton, Sterns & Poggenb. – P; G; WETL; RS-261; Unit 20

*Andropogon ternarius* Michx. – P; G; DAOFF; RS-263; Unit 20

*Aristida ramosissima* Engelm. ex A. Gray – A; G; DAOFF; RS-223; Unit 30E

†*Axonopus furcatus* (Flueggé) Hitchc. – P; G; WETL; RS-167; Unit 13

\**Bromus arvensis* L. – A; G; DAOFF; RS-047; Unit 6

\**Bromus secalinus* L. – A; G; DAOFF; RS-071; Unit 9

*Coleataenia longifolia* (Torr.) Soreng ssp. *rigidula* (Bosc ex Nees) Soreng; P; G; Unit 9 – P; G; DAOFF; RS-183; Unit 9

\**Dactylis glomerata* L. – P; G; DAOFF; RS-022; Unit 27A

*Danthonia spicata* (L.) P. Beauv. ex Roem. & Schult. – P; G; QACA; RS-079; Unit 9

*Dichantherium aciculare* (Desv. ex Poir.) Gould & C.A. Clark – P; G; DAOFF; RS-195; Unit 9

*Dichantherium villosissimum* (Nash) Freckmann – P; G; DAOFF; RS-196; Unit 9

*Digitaria ciliaris* (Retz.) Koeler – A; G; DAOFF; RS-194; Unit 9

*Digitaria cognata* (Schult.) Pilg. – P; G; DAOFF; RS-131; Unit 38

*Echinochloa muricata* (P. Beauv.) Fernald – A; G; WETL; RS-140; Unit 13

\**Eleusine indica* (L.) Gaertn. – A; G; DAOFF; RS-109; Unit 11

*Eragrostis hirsuta* (Michx.) Nees – P; G; DAOFF; RS-131; Unit 38

*Eragrostis spectabilis* (Pursh) Steud. – P; G; DAOFF; RS-199; Unit 9

*Eriochloa contracta* Hitchc. – A; G; DAOF; RS-141; Unit 13

*Glyceria septentrionalis* Hitchc. – P; G; WETL; RS-073; Unit 9

†*Leptochloa panicoides* (J. Presl) Hitchc. – A; G; WETL; RS-189; Unit 30E

*Panicum dichotomiflorum* Michx. – A; G; DAOF; RS-221; Unit 30E

*Panicum virgatum* L. – P; G; DAOF; RS-100; Unit 10

\**Paspalum urvillei* Steud. – P; G; DAOF; RS-270; Otter Lake

*Poa autumnalis* Muhl. ex Elliott – P; G; DAOF; RS-095; Unit 35

†*Saccharum giganteum* (Walter) Pers. – P; G; WETL; RS-260; Unit 26

\**Schedonorus arundinaceus* (Schreb.) Dumort – P; G; DAOF; RS-026; Unit 30E

*Sorghastrum nutans* (L.) Nash – P; G; DAOF; RS-173; Unit 20

*Sphenopholis obtusata* (Michx.) Scribn. – P; G; WETL; RS-039; Unit 8

*Steinchisma hians* (Elliott) Nash – P; G; WETL; RS-184; Unit 5

*Tridens strictus* (Nutt.) Nash – P; G; DAOF; RS-156; Unit 9

*Tripsacum dactyloides* (L.) L. – P; G; DAOF; RS-171; Unit 16W

\**Triticum aestivum* L. – A; G; DAOF; RS-069; Unit 9

\**Vulpia myuros* (L.) C.C. Gmel. – A; G; DAOF; RS-058; Teal Lake

#### POLYGALACEAE

*Polygala sanguinea* L. – A; F; DAOF; RS-121; Unit 34

#### POLYGONACEAE

*Brunnichia ovata* (Walter) Shinnars – P; V; WETL; RS-098; Unit 10

*Persicaria amphibia* (L.) Delarbre – P; F; WETL; RS-222; Unit 38

†*Persicaria glabra* (Willd.) M. Gómez – A; F; WETL; RS-228; Unit 38

#### PONTEDERACEAE

†*Heteranthera multiflora* (Griseb.) C.N. Horn – A; F; WETL; RS-238; Unit 27A

#### PORTULACACEAE

\**Portulaca oleracea* L. – A; F; DAOF; RS-202; Unit 31

#### POTAMOGETONACEAE

*Potamogeton diversifolius* Raf. – P; F; WETL; RS-055; Unit 44

*Potamogeton nodosus* Poir. – P; F; WETL; RS-056; Unit 27A

*Potamogeton pusillus* L. ssp. *pusillus* – P; F; WETL; RS-275; Bittern Lake

#### RANUNCULACEAE

\**Ranunculus sardous* Crantz – A; F; DAOF; RS-038; Unit 8

*Ranunculus longirostris* Godr. – P; F; WETL; RS-287; Unit 10

*Thalictrum thalictroides* (L.) Eames & B. Boivin – P; F; QACA; RS-091; Unit 35

#### ROSACEAE

*Crataegus spathulata* Michx. – P; T; QACA; RS-258; Unit 4

*Potentilla simplex* Michx. – P; F; DAOF; RS-028; Unit 39

#### RUBIACEAE

\**Sherardia arvensis* L. – A; F; DAOF; RS-017; Unit 6

#### RUTACEAE

*Zanthoxylum clava-herculis* L. – P; T; DAOF; RS-164; Unit 9

#### SALICACEAE

*Populus deltoides* W. Bartram ex Marshall ssp. *deltoides* – P; T; QNQP; RS-020; Unit 15

#### SAPOTACEAE

*Sideroxylon lanuginosum* Michx. ssp. *lanuginosum* – P; T; QACA; RS-235; Unit 58

#### SOLANACEAE

*Physalis pubescens* L. – A; F; DAOF; RS-138; Unit 19

#### SPHENOCLEACEAE

\**Sphenoclea zeylanica* Gaertn. – A; F; WETL; RS-273; Unit 31

#### TYPHACEAE

*Typha angustifolia* L. – P; F; WETL; RS-285; Unit 26

#### ULMACEAE

*Ulmus alata* Michx. – P; T; QACA; RS-154; Unit 9

#### VERBENACEAE

*Verbena brasiliensis* Vell. – A; F; DAOF; RS-210; Unit 8