

**A PRELIMINARY INVENTORY OF THE VASCULAR AND NON-VASCULAR FLORA
OF THE _____ RANCH, WHARTON COUNTY, TEXAS, USA**

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OVERVIEW

The following is a report of the findings from a plant survey of the _____ Ranch, _____, Wharton County, Texas. Wharton County is almost entirely within the Gulf Prairies and Marshes Ecoregion, with the exception of a small portion in the extreme western part of the county, which is in the Post Oak Savannah Ecoregion. The following description of the region is adapted from Hatch, et al. (1990).

The Gulf Prairies and Marshes Ecoregion, covering approximately 500,000 acres, are a narrow strip of lowlands adjacent to the Gulf coast and barrier islands, which extend from Mexico to Louisiana. The Gulf Prairies include the nearly flat plain extending 30 to 80 miles inland from the Gulf Marshes. The Gulf Marshes are a low, wet, marshy coastal area, commonly covered with saline water, and range from sea level to a few feet in elevation. The Gulf Prairies are nearly level and virtually un-dissected plains having slow surface drainage and elevations from sea level to 250 feet.

Soils of the Gulf Marshes are dark, poorly drained sandy loams and clays, and light neutral sands, typically showing little textural change with depth. The loamy and clayey soils are commonly saline and sodic. Prairie soils are dark, neutral to slightly acid clay loams and clays in the northeastern parts. Further south in the sub-humid Coastal Bend, the soils are less acidic. A

narrow band of light acid sands and darker loamy to clayey soils stretches along the coast. Inland from the dark clayey soils is a narrow belt of lighter acid fine sandy loam soils with gray to brown, and red mottled subsoils. Soils of the river bottomlands and broad deltaic plains are reddish brown to dark gray, slightly acid to calcareous, loamy to clayey alluvial.

The original vegetation types of the Gulf Prairie were tallgrass prairie and post oak savannah. However, trees and shrubs such as honey mesquite (*Prosopis glandulosa*), oaks (*Quercus*), and acacia (*Acacia*) have increased and thickened in many places. Characteristic oak species are live oak (*Quercus virginiana*) and post oak (*Q. stellata*). Typical acacias are huisache (*Acacia smallii*) and blackbrush (*A. rigidula*). Bushy sea-ox-eye (*Borrchia frutescens*), a dwarf shrub, is also typical.

Principal climax grasses of the Gulf Prairie are Gulf cordgrass (*Spartina spartinae*), big bluestem (*Andropogon gerardii* var. *gerardii*), little bluestem (*Schizachyrium scoparium*), indiagrass (*Sorghastrum nutans*), eastern gamagrass (*Tripsacum dactyloides*), gulf muhly (*Muhlenbergia capillaris*), tanglehead (*Heteropogon contortus*), and many species of *Panicum* and *Paspalum*. Common increasers and invaders are yankeeweed (*Eupatorium compositifolium*), broomsedge bluestem (*Andropogon virginicus*), smutgrass (*Sporobolus indicus*), western ragweed (*Ambrosia psilostachya*), tumblegrass (*Schedonnardus paniculatus*), threeawns (*Aristida*), and many annual forbs and grasses. Pricklypear (*Opuntia*) are common throughout the area. Characteristic forbs include asters (*Aster*), Indian paintbrush (*Castilleja indivisa*), poppy mallows (*Callirhoe*), phloxes (*Phlox*), bluebonnets (*Lupinus*), and evening primroses (*Oenothera*).

The Gulf Marsh areas, being variously salty, support species of sedges (*Carex* and *Cyperus*), rushes (*Juncus*), bulrushes (*Scirpus*), several cordgrasses (*Spartina*), coastal saltgrass (*Distichlis spicata* var. *spicata*), common reed (*Phragmites australis*), marshmillet (*Zizaniopsis miliacea*), longtom (*Paspalum lividum*), seashore dropseed (*Sporobolus virginicus*), and knotroot bristlegrass (*Setaria parviflora*). Marshmillet and maidencane (*Panicum hemitomon*) are two of the most important grasses of the fresh-water marshes of the upper coast. Common aquatic forbs are smartweeds (*Polygonum*), docks (*Rumex*), bushy seedbox (*Ludwigia alternifolia*), green parrotfeather (*Myriophyllum pinnatum*), pennyworts (*Hydrocotyle*), water lilies (*Nymphaea*),

narrowleaf cattail (*Typha domingensis*), spiderworts (*Tradescantia*), and duckweeds (*Lemna*). Common halophytic herbs and shrubs on salty sands are spikesedges (*Eleocharis*), fimbries (*Fimbristylis*), glassworts (*Salicornia*), sea-rockets (*Cakile*), maritime saltwort (*Batis maritima*), morningglories (*Ipomoea*), and bushy sea-ox-eye.

METHODS

Field Methods

Three (3) multi-day visits were made to the property during the course of the survey. These visits were intended to maximize collections (and therefore species diversity) by anticipating changes in the flora based on the temporal (seasonal) fluctuations in the vegetative community composition. Field collection trips were made during the spring (13-15 April), summer (8-10 June), and fall (15-16 November) of 2018.

Collections, or observations, were completed in each of the designated Focus Areas (1-8) as set forth in the original agreement, and each Focus Area was visited at least once during each trip. Whereas the goal of this inventory was to compile a “species list” for the property, each species was collected only once, even if the species was present in multiple Focus Areas, or habitats. Although each Focus Area was sampled repeatedly, many additional species were observed between focus areas (along roadways and other non-focus areas). These “opportunistic collections” were added to the overall inventory and contributed a significant component to the overall diversity of the property. At each of the sites inventoried, species were visually selected based on a qualitative sampling of the different habitat types and ecotones present.

Herbarium Methods

Field collections were returned to the S.M. Tracy Herbarium for identification, and subsequently processed for deposit in the permanent collection. Identifications were completed to the lowest taxonomic level possible using current literature sources, and verified using reference specimens contained in the herbarium. Nomenclature follows USDA (2019) for all vascular plants and algae; mosses follow FNA (2007, 2014); liverworts follow Stotler and Crandall-Stotler (2017).

RESULTS

The currently documented flora of the _____ Ranch comprises 283 species, represented by 248 vouchers and 35 observations. The sampled flora is distributed across 5 major plant groups and encompasses 82 families and 200 genera (Table 1). Annuals represent ca. 25% of the flora, perennials dominate at ca. 75% (calculations based on the exclusion of the non-vascular flora) (Table 2). The flora is overwhelmingly native 82%, exotic (introduced) species represent the remaining 18% (calculations based on the exclusion of the non-vascular flora) (Table 3).

The vast majority (94%) of the flora is represented by vascular plants and ferns, with the mosses representing the next largest group. The largest families, of vascular plants, are the Poaceae (grasses) with 50 species, Cyperaceae (sedges) with 28 species, Asteraceae (sunflowers) with 20 species, and Juncaceae (rushes) with 7 species. This taxonomic distribution is typical and as expected for a site, located in the coastal plain (prairie) of Texas, which has been heavily impacted by decades of agriculture and commercial development. Additional sampling of the property over a longer period of time, and at different times, would reasonably increase the total numbers of species, especially in the Asteraceae, Fabaceae, Brassicaceae (mustard), Lamiaceae (mint), and possibly Caryophyllaceae (pink) families. This continued sampling should also make noticeable contributions to the Poaceae and Cyperaceae families as well. Many of the species in these families tend to be somewhat “weedy” and are very likely present, but not sampled at the times the property was visited.

One species, *Cyperus rotundus* L. (Cyperaceae) or nutsedge, was not located on the property. While this is surprising, this also a positive sign since it is a very aggressive weed in many cropping systems. A notable collection was *Rhychospora indianolensis* Small (Cyperaceae) or Indianola beakrush, collected along the riparian border in Focus Area 6, and also observed in the “potholes” along the roadway to FA 6. *R. indianolensis* is an infrequently collected species that is distributed along the coastal plain from northern South America to eastern Texas. *Marsilea vestita* Hook. & Grev. ssp. *vestita* (Marsileaceae) or hooked pepperwort, is an aquatic fern collected in FA 3. Although not rare, it is nonetheless an interesting, infrequently collected, species.

Algae, bryophytes, and lichens (although technically not plants) were not included in the original scope of work. These non-vascular plants are routinely omitted in such surveys, however in many sites they can contribute greatly to the overall diversity of a flora. While the moss and liverwort diversity is expected to be lower in the Gulf Coastal Plain, when compared to sites such as the East Texas Piney Woods, a higher number of species would have been expected. The lower diversity of these groups is very likely the result of limited collections (collection effort) and seasonal fluctuations in the flora. Seasonal fluctuation in abiotic conditions (most notably moisture) are a dominant driving factor in the presence of these groups. Continued sampling of the property should reasonably yield a 30-40% increase in the bryophyte flora.

One alga, collected from a manmade impoundment, primarily because the species is easily identifiable. There is undoubtedly a greater diversity of algae on the property, collection and identification would require a specialist beyond the scope of expertise of the PI's. Sampling of lichens on the property would be a worthwhile endeavor and would contribute a significant number of species to the overall diversity.

Table 1: Taxonomic Composition of Flora.

Group	Families	Genera	Species
Charophyta (algae)	1	1	1
Bryophyta (mosses)	8	10	11
Marchantiophyta (liverworts)	2	2	2
Pteridophyta (ferns)	3	3	3
Magnoliophyta (Liliopsida - monocots)	14	59	107
Magnoliophyta (Magnoliopsida - dicots)	54	125	159
Totals	82	200	283

Table 2: Life Cycle Pattern.

Group	Annual	Perennial	Total
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Pteridophyta (ferns)	0	3	3
Magnoliophyta (Liliopsida - monocots)	21	81	102
Magnoliophyta (Magnoliopsida - dicots)	45	105	150
Total	66	189	255

Table 3: Native and Introduced Species.

Group	Native	Introduced	Total
Pteridophyta (ferns)	3	0	3
Magnoliophyta (Liliopsida - monocots)	78	23	101
Magnoliophyta (Magnoliopsida - dicots)	127	22	149
Total	208	45	253

Wetland Indicator Values

Wetland indicator values were determined for all species as assigned by the U.S. Army Corps of Engineers (ACOE). The ACOE categorizes as *hydrophytes* those species with an indicator value of OBL, FACW, and FAC. Hydrophytes (FAC-36, FACW-38, OBL-50) comprise nearly half (49%) of the vascular flora of _____ Ranch, non-hydrophytes (UPL-76, FACU-52) comprise 51% of the flora.

State and Federal Noxious Weeds

Texas State-listed Noxious Weeds under the Texas Administrative Code, Title 4, Part 1, Chapter 19, Subchapter T, Rule §19.300 (2005) are considered “plants [that] have serious potential to cause economic or ecological harm to the state.” Four noxious species, possibly five, are present

on the property: *Alternanthera philoxeroides*, *Arundo donax*, *Eichhornia crassipes*, *Triadica sebifera* and potentially *Cuscuta japonica*. Also found on the property and listed in the Texas Administrative Code, as an “invasive” weed instead of “noxious,” was *Melia azedarach*.

Recommended management practices for these species are outlined below.

Endangered and Threatened Species

No threatened or endangered species were found on the property during the course of this inventory.

New County Records

An estimated 97% of the land in Texas is private property. In a private property state like Texas, access to suitable collecting sites is limited to federal and state properties, in addition to a small number of cooperating private landowners. This limited access has resulted in much of the state without documented collections of most groups of organisms, both flora and fauna. The access provided by the _____ Ranch has significantly increased the known flora of Wharton County. Based on records obtained from the USDA-NRCS online database (USDA, 2019) nearly 70% (199 of 283) of the collections made were new county records.

RECOMMENDATIONS

Neither the principal investigators, nor any of the students associated with this inventory, are Certified Pesticide Applicators. Therefore, any recommendations must be verified by a certified applicator. The application of pesticides should be conducted in accordance with all state and federal regulations and according to manufacturer’s recommendations.

Noxious Plant Management

Alternanthera philoxeroides (Amaranthaceae), commonly known as alligatorweed, is an aquatic noxious weed found in several areas around the property, typically along the ecotones between the wetland areas and terrestrial roads. Although a common weed in rice/wetland systems, it has the potential for ecosystem degradation and outcompeting of native wetland forbs. Physical or mechanical removal is not recommended for this species, as it has the ability to resprout from a

single stem fragment. The most successful herbicide treatments specifically contain fluridone or imazapyr; however, more common herbicides (such as 2,4-D, glyphosate, or triclopyr), have some success, but they are less effective.

Arundo donax (Poaceae), also called giant reed, was another state-level noxious weed found on the property. A single small population was found at Focus Area 2 (_____ Pond 1). The population appears to have been planted for use as cover for duck hunting. This species' ability to quickly spread and outcompete native vegetation can prove to be problematic in the future. Although mechanical treatment is generally ineffective, prescribed burning combined with careful individual plant treatment of an herbicide such as glyphosate have shown to be effective at its control and eventual eradication.

Eichhornia crassipes (Pontederiaceae), also known as "water hyacinth," was found at N _____ °, W _____ ° floating in the creek/drainage. It can multiply rapidly, decreasing both biodiversity and water quality. Our recommendation is physical or mechanical removal of the population with continued monitoring to ensure eradication, though herbicides such as 2,4-D or glyphosate have shown to also be effective treatments however they have the ability to also affect native species.

Triadica sebifera (Euphorbiaceae), commonly known as Chinese tallow, was another noxious weed found in many areas all over the property, particularly in the forested riparian zone. It is highly invasive and can spread through seed very rapidly. Prescribed burning and mowing have proven effective in more open rangeland settings; in the forested areas, however, individual mechanical treatment (probably using chainsaws) may be necessary to slow its spread. These cuttings should be followed by triclopyr herbicide treatment on the stumps to prevent regrowth.

Cuscuta sp. (Convolvulaceae), also known as dodder, was found at Focus Area 3 (_____ Pond 2) and a few other scattered locations. However, due to the lack of reproductive structures, needed to accurately differentiate between species, it is unknown whether it is a native species or the introduced, noxious *Cuscuta japonica*. It is likely the native species and will not require any additional management, though the area should be monitored in the future to ensure the

population is not expanding; if it is determined to be the noxious species, it could be detrimental to the rice crops on the property.

Melia azedarach (Meliaceae), also called chinaberry, was also included in the state-listed plant list, not as noxious but as an “invasive.” It was found adjacent to the caliche roadway at N _____ °, W _____ °, as well as several other sites particularly along the riparian corridors. Similar in habit to Chinese tallow, it can be prone to spreading quickly through its berries full of small seeds. Mechanical treatment is largely ineffective, however, it is highly sensitive to most herbicides and they can be applied to a cut stump or even to the base of the trunk.

Poncirus trifoliata (Rutaceae), or trifoliolate orange, although not yet listed as a noxious weed, was found in Focus Area 4. This species is an invasive, introduced tree that has been known to outcompete native vegetation if not kept in check. One of the most proven methods for its eradication is mechanical cutting to the ground followed by individual plant treatment of glyphosate and/or triclopyr to prevent re-sprouting.

Vegetative Community Recommendations

The “prairie potholes” found at N _____ °, W _____ ° seemed to lack expected diversity and more closely represented a graminoid monoculture rather than a diverse herbaceous wetland; this is likely due to the periodic application of herbicide in the pasture. To increase diversity, it is our recommendation that herbicide application is ceased and beneficial rangeland practices are implemented, such as prescribed burning and/or managing low stocking rates.

The southernmost area (Focus Area 4) was easily one of the most diverse areas on the property, with a vast array of flora (both vascular and otherwise), fauna, and forest fungi. Exceptionally large specimens of *Quercus macrocarpa*, bur oak, and *Cephalanthus occidentalis*, common buttonbush, were found in this area, which led us to believe it is one of the most preserved parts of the ranch; we recommend special care be taken to protect the heightened biodiversity of this area.

The remainder of the property, be it open rangeland, forest, or woodland, seems to be exhibiting adequately good ecosystem health. It is our recommendation that proper beneficial ecosystem management practices continue to be implemented and maintained to prevent soil erosion, promote plant community health, encourage nutrient cycling, as well as increase and safeguard the plant diversity found in this property.

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CHECKLIST OF THE VASCULAR AND NON-VASCULAR FLORA

In the checklist that follows, taxa are arranged in five major groups: Charophyta (green algae), Bryophyta (mosses), Marchantiophyta (liverworts), Magnoliophyta - Liliopsida (moncots), and Magnoliophyta - Magnoliopsida (dicots). Within each of these major groups, taxa are arranged alphabetically by family and lastly by genus. Collections listed with a “sp.” (i.e., *Carex* sp.) were not identifiable to the species level, but are believed to be different from other species of the same genus, or within the family. With the exception of the bryophytes and algae, common names are included where such names could be determined (most bryophytes and algae do not have common names, nor applicable indicators as applied to vascular plants). The remainder of the columns present data for each species (as could be determined) represented by the notations in Table 4.

Table 4: Explanation of Notations

V	voucher	specimen collection was made
O	observation	the taxon was seen on the property, no collection
NW	noxious weed	USDA, 2019
A	annual	Hatch, et al., 1990
P	perennial	Hatch, et al., 1990
B	biennial	Hatch, et al., 1990
N	native to Texas	Hatch, et al., 1990
I	introduced to Texas	Hatch, et al., 1990
WIS	wetland indicator status	NWPL, 2018
	OBL - Obligate Wetland	- almost always occur in wetlands
	FACW - Facultative Wetland	- usually in wetlands, but may occur in non-wetlands
	FAC - Facultative	- occur in wetlands and non-wetlands
	FACU - Facultative Upland	- usually in non-wetlands, but may occur in wetlands
	UPL - Obligate Upland	- almost never occur in wetlands
WCR	Wharton County Record	USDA, 2019

TAXON	COMMON NAME(S)	V/O	NW	A/P/B	N/I	WIS	WCR
CHAROPHYTA (algae)							
CHARACEAE							
<i>Chara vulgaris</i> L.	common stonewort	V					x
BRYOPHYTA (mosses)							
BRACHYTHECIACEAE							
<i>Clasmatodon parvulus</i> (Hampe) Sullivant		V					
<i>Rhynchostegium serrulatum</i> (Hedwig) A. Jaeger		V					
BRYACEAE							
<i>Bryum</i> sp.		V					
ENTODONTACEAE							
<i>Entodon seductrix</i> (Hedwig) Muller Hal.		V					
FISSIDENTACEAE							
<i>Fissidens bryoides</i> Hedw.		V					
<i>Fissidens taxifolius</i> Hedw.		V					
FUNARIACEAE							
<i>Physcomitrium pyriforme</i> (Hedw.) Hampe		V					
LESKEACEAE							

Haplocladium microphyllum (Hedwig) Brotherus V

LEUCODONTACEAE

Leucodon julaceus (Hedwig) Sullivant V

POTTIACEAE

Syntrichia ruralis (Hedw.) F. Weber & D. Mohr V

Weissia controversa Hedw. V

MARCHANTIOPHYTA (liverworts)

FRULLANIACEAE

Frullania ericoides (Nees) Mont. V

PORELLACEAE

Porella pinnata L. V

PTERIDOPHYTA (ferns)

ASPLENIACEAE

Asplenium sp. spleenwort O x

MARSILEACEAE

Marsilea vestita Hook. & Grev. ssp. *vestita* hooked pepperwort V P N OBL

POLYPODIACEAE

Pleopeltis polypodioides (L.) Andrews & Windham ssp. *michauxiana* (Weath.) Andrews & Windham resurrection fern V P N FACU x

MAGNOLIOPHYTA (Liliopsida - Monocots)**ALISMATACEAE**

<i>Echinodorus berteroi</i> (Spreng.) Fassett	upright burhead	V	A	N	UPL	x
<i>Sagittaria graminea</i> Michx. var. <i>graminea</i>	grassy arrowhead	V	P	N	OBL	x
<i>Sagittaria longiloba</i> Engelm. ex J.G. Sm.	long-barb arrowhead	V	P	I	OBL	x
<i>Sagittaria platyphylla</i> (Engelm.) J.G. Sm.	delta arrowhead	V	P	N	OBL	x

ARECACEAE

<i>Sabal minor</i> (Jacq.) Pers.	dwarf palmetto	V	P	N	FACW	
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BROMELIACEAE

<i>Tillandsia recurvata</i> (L.) L.	small ballmoss	V	P	N	UPL	
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CYPERACEAE

<i>Carex albolutescens</i> Schwein.	greenish-white sedge	V	P	N	FACW	x
<i>Carex cherokeensis</i> Schwein.	cherokee sedge	V	P	N	FACW	
<i>Carex crus-corvi</i> Shuttlw. ex Kunze	ravenfoot sedge	V	P	N	OBL	x
<i>Carex frankii</i> Kunth	frank's sedge	V	P	N	OBL	x
<i>Carex hyalinolepis</i> Steud.	shoreline sedge	V	P	N	OBL	x
<i>Carex</i> sp. 1		V				
<i>Carex</i> sp. 2		V				
<i>Carex vulpinoidea</i> Michx.	fox sedge	V	P	N	FACW	x
<i>Cyperus acuminatus</i> Torr. & Hook. ex Torr.	taperleaf flatsedge	V	P	N	OBL	x
<i>Cyperus articulatus</i> L.	jointed flatsedge	V	P	N	OBL	
<i>Cyperus esculentus</i> L.	yellow nutgrass flatsedge	V	P	N	FACW	
<i>Cyperus iria</i> L.	ricefield flatsedge	V	A	I	FACW	x
<i>Cyperus ochraceus</i> Vahl	pond flatsedge	V	P	N	FACW	x

<i>Cyperus pseudovegetus</i> Steud.	marsh flatsedge	V	P	N	FACW	x
<i>Cyperus retrorsus</i> Chapm.	pine barren flatsedge	V	P	N	FAC	x
<i>Cyperus</i> sp.		V				
<i>Cyperus virens</i> Michx.	green flatsedge	V	P	N	FACW	x
<i>Eleocharis albida</i> Torr.	white spikerush	V	P	N	OBL	x
<i>Eleocharis coloradoensis</i> (Roem. & Schult.) Link ex Bluff, Nees & Schauer	dwarf spikerush	V	P	N	UPL	x
<i>Eleocharis montana</i> (Kunth) Roem. & Schult.	mountain spikerush	V	P	N	OBL	x
<i>Eleocharis montevidensis</i> Kunth	sand spikerush	V	P	N	FACW	x
<i>Eleocharis quadrangulata</i> (Michx.) Roem. & Schult.	squarestem spikerush	V	P	N	OBL	x
<i>Eleocharis rostellata</i> (Torr.) Torr.	beaked spikerush	V	P	N	OBL	x
<i>Eleocharis</i> sp.		V				
<i>Rhynchospora caduca</i> Elliott	anglestem beakrush	V	P	N	OBL	x
<i>Rhynchospora corniculata</i> (Lam.) A. Gray	short-bristle horned beak sedge	V	P	N	OBL	
<i>Rhynchospora globularis</i> (Chapm.) Small	globe beakrush	V	P	N	FACW	x
<i>Rhynchospora indianolensis</i> Small	Indianola beakrush	V	P	N	FACW	x

IRIDACEAE

<i>Herbertia lahue</i> (Molina) Goldblatt	prairie nymph	V	P	N	UPL	
<i>Sisyrinchium minus</i> Engelm. & A. Gray	dwarf blue-eyed grass	V	P	N	FACU	x

JUNCACEAE

<i>Juncus acuminatus</i> Michx.	knotleaf rush	V	P	N	OBL	x
<i>Juncus bufonius</i> L.	toad rush	V	A	N	OBL	x
<i>Juncus dichotomus</i> Elliott	forked rush	V	P	N	FACW	x
<i>Juncus diffusissimus</i> Buckley	slimpod rush	V	P	N	FACW	x
<i>Juncus effusus</i> L.	common rush	V	P	N	OBL	x
<i>Juncus marginatus</i> Rostk.	grassleaf rush	V	P	N	FACW	x
<i>Juncus tenuis</i> Willd.	slender rush	V	P	N	FAC	

LEMNACEAE

<i>Lemna minor</i> L.	common duckweed	V		P	N	UPL	x
<i>Lemna minuta</i> Kunth	least duckweed	V		P	N	UPL	x
<i>Spirodela punctata</i> G. Mey.) D.H. Les & D.J. Crawford	dotted duckmeat	V		P	N	UPL	x
<i>Wolffia brasiliensis</i> Weddell	Brazilian watermeal	V		P	N	OBL	x
<i>Wolffia columbiana</i> Karst.	Columbian watermeal	V		P	N	OBL	x

LILIACEAE

<i>Allium canadense</i> L. var. <i>canadense</i>	wild onion	V		P	N	UPL	
<i>Nothoscordum bivalve</i> (L.) Britton	crow poison	V		P	N	FACU	

MARANTACEAE

<i>Thalia dealbata</i> Fraser ex Roscoe	powdery alligator-flag	V		P	N	OBL	x
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ORCHIDACEAE

<i>Spiranthes vernalis</i> Engelm. & A. Gray	spring ladie's tresses	O		P	N	FACW	x
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POACEAE

<i>Agrostis eliottiana</i> Schult.	Elliott's bentgrass	V		A	N	FACU	x
<i>Andropogon glomeratus</i> (Walter) Britton, Sterns & Poggenb.	bushy bluestem	V		P	N	FACW	x
<i>Andropogon virginicus</i> L.	broomsedge bluestem	V		P	N	FACU	x
<i>Aristida longespica</i> Poir. var. <i>geniculata</i> (Raf.) Fernald	slimspike threeawn	V		P	N	FACU	x
<i>Arundinaria gigantea</i> (Walter) Muhl.	giant cane/bamboo	V		P	N	FACW	x
<i>Arundo donax</i> L.	giant reed	O	x	P	I	FAC	x
<i>Bothriochloa ischaemum</i> (L.) Keng	King Ranch bluestem	O		P	I	UPL	x
<i>Bothriochloa laguroides</i> (DC.) Herter	silver bluestem	O		P	N	UPL	x
<i>Briza minor</i> L.	little quakinggrass	V		A	I	FAC	x

<i>Bromus catharticus</i> Vahl	rescuegrass	V	A	I	UPL	
<i>Chasmanthium latifolium</i> (Michx.) Yates	wood oats	V	P	N	FACU	
<i>Chloris virgata</i> Sw.	feather fingergrass	V	A	N	FACU	x
<i>Critesion pusillum</i> Nutt.	little barley	V	A	N	UPL	x
<i>Cynodon dactylon</i> (L.) Pers.	bermudagrass	V	P	I	FACU	x
<i>Dactyloctenium aegyptium</i> (L.) Willd.	durban crowfootgrass	V	P	I	UPL	
<i>Dichantherium oligosanthes</i> (Schult.) Gould	Heller's rosette grass	V	P	N	UPL	
<i>Dichantherium</i> sp.	rosette grass	V				
<i>Dichanthium annulatum</i> (Forssk.) Stapf	Kleberg's bluestem	V	P	I	UPL	x
<i>Digitaria bicornis</i> (Lam.) Roem. & Schult.	crabgrass	V	A	I	FACU	x
<i>Echinochloa colona</i> (L.) Link	jungle-rice	V	A	I	FACW	
<i>Echinochloa crus-galli</i> (L.) P. Beauv.	barnyardgrass	V	A	I	FAC	
<i>Eleusine indica</i> (L.) Gaertn.	goosegras	V	A	I	FACU	x
<i>Elymus canadensis</i> L.	Canada wildrye	V	P	N	FACU	x
<i>Elymus virginicus</i> L.	Virginia wildrye	V	P	N	FAC	x
<i>Eragrostis</i> sp.		V				
<i>Leersia hexandra</i> Se.	clubhead cutgrass	V	P	N	OBL	
<i>Leersia lenticularis</i> Michx.	catchflygrass	V	P	N	OBL	x
<i>Leersia virginica</i> Wild.	whitegrass	V	P	N	FACW	x
<i>Leptochloa nealleyi</i> Vasey	Nealley sprangletop	V	A	N	UPL	x
<i>Lolium perenne</i> L.	ryegrass	V	A	I	FACU	x
<i>Nassella leucotricha</i> (Trin. & Rupr.) Pohl	Texas wintergrass	V	P	N	UPL	
<i>Oryza sativa</i> L.	cultivated rice	O	A	I	OBL	x
<i>Panicum hians</i> (Elliott) Nash	gaping grass	V	P	N	UPL	x
<i>Panicum virgatum</i> L.	switchgrass	O	P	N	FACU	x
<i>Paspalum denticulatum</i> Trin.	longtom	V	P	N	OBL	
<i>Paspalum lividum</i> Trin.	longtom	V	P	N	UPL	x
<i>Paspalum notatum</i> Flueggé	bahiagrass	O	P	I	UPL	
<i>Paspalum plicatulum</i> Michx.	brownseed paspalum	V	P	N	FAC	

<i>Paspalum urvillei</i> Steud.	vasey grass	V		P	I	FACW	
<i>Phalaris angusta</i> Nees ex Trin.	Timothy canarygrass	V		A	N	FACW	x
<i>Phalaris caroliniana</i> Walter	Carolina canarygrass	V		A	N	FACW	
<i>Polypogon monspeliensis</i> (L.) Desf.	rabbitfoot-grass	V		A	I	FACW	x
<i>Schizachyrium scoparium</i> (Michx.) Nash	little bluestem	V		P	N	UPL	
<i>Setaria parviflora</i> (Poir.) Kerguélen	knotroot bristlegrass	V		P	N	FAC	x
<i>Sorghum halepense</i> (L.) Pers.	Johnson grass	V		P	I	FACU	
<i>Sporobolus indicus</i> (L.) R. Br.	rattail smutgrass	V		P	I	FACU	
<i>Sporobolus pyramidatus</i> (Lam.) Hitche.	Madagascar dropseed	V		P	N	FAC	x
<i>Stenotaphrum secundatum</i> (Walter) Kuntze	St. Augustine grass	V		P	I	FAC	x
<i>Vulpia octoflora</i> (Walter) Rydb. var. <i>octoflora</i>	sixweeks fescue	V		A	N	FACU	x
<i>Zea mays</i> L.	corn	O		A	I	UPL	x

PONTEDERIACEAE

<i>Eichhornia crassipes</i> (Mart.) Solms	water hyacinth	V	x	P	I	OBL	x
<i>Heteranthera limosa</i> (Sw.) Willd.	blue mudplantain	O		A	N	OBL	

SMILACACEAE

<i>Smilax bona-nox</i> L.	saw greenbrier	V		P	N	FACU	x
<i>Smilax rotundifolia</i> L.	roundleaf greenbrier	V		P	N	FAC	x

TYPHACEAE

<i>Typha latifolia</i> L.	broadleaf cattail	V		P	N	OBL	
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MAGNOLIOPHYTA (Magnoliopsida - Dicots)

ACANTHACEAE

<i>Dicliptera brachiata</i> (Pursh) Spreng.	false mint	V		P	N	FACW	
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Hygrophila lacustris (Schltdl. & Cham.) Nees gulf swampweed V P N OBL x

Justicia americana (L.) Vahl american water-willow V P N OBL x

Ruellia nudiflora (Engelm. & A. Gray) Urb. var. *nudiflora* violet ruellia V P N UPL

ACERACEAE

Acer negundo L. boxelder V P N FACU x

AMARANTHACEAE

Alternanthera philoxeroides (Mart.) Griseb. alligatorweed V x P I OBL x

Gomphrena nealleyi J.M. Coult. & Fisher Nealley's globe amaranth V P N UPL x

ANACARDIACEAE

Toxicodendron radicans (L.) Kuntze poison oak V P N FACU x

APIACEAE

Eryngium hookeri Walp. Hooker's eryngo V A N FACW

Hydrocotyle verticillata Thunb. var. *verticillata* whorled pennywort V P N OBL x

Limnoscium pumilum (Engelm. & A. Gray) Mathias & Constance prairie dogshade V A N FACW x

Polytaenia nuttallii DC. prairie-parsley V B N UPL x

Ptilimnium nuttallii DC. Nuttall's mock bishop's-weed V A N FACW x

AQUIFOLIACEAE

Ilex decidua Walter deciduous holly V P N FAC x

Ilex vomitoria Aiton yaupon V P N FAC

ARALIACEAE

Hedera helix L. English ivy V P I UPL x

ASCLEPIADACEAE

<i>Asclepias perennis</i> Walter	thin-leaf milkweed	V	P	N	OBL	
<i>Asclepias viridis</i> Walter	antelopehorn milkweed	V	P	N	UPL	

ASTERACEAE

<i>Ambrosia trifida</i> L.	giant ragweed	V	A	N	FAC	x
<i>Amphichyris dracunculoides</i> (DC.) Nutt.	annual broomweed	O	A	N	UPL	
<i>Baccharis salicina</i> Torr. & A. Gray	willow baccharis	V	P	N	FAC	x
<i>Calyptocarpus vialis</i> Less.	prostrate lawnflower	V	P	I	FAC	x
<i>Chloracantha spinosa</i> (Benth.) G.L. Nesom	spiny aster	O	P	N	FACW	x
<i>Cirsium horridulum</i> Michx.	horrid/bull thistle	V	P	N	FAC	x
<i>Cirsium texanum</i> Buckley	Texas thistle	V	P	N	UPL	x
<i>Conyza canadensis</i> (L.) Cronquist var. <i>canadensis</i>	horse-tail conyza, horseweed	V	A	N	UPL	x
<i>Coreopsis tinctoria</i> Nutt.	golden tickseed	V	P	N	FAC	x
<i>Eupatorium</i> sp.		O				
<i>Gamochaeta pensylvanica</i> (Willd.) Cabrera	Pennsylvania everlasting	V	A	N	UPL	x
<i>Helenium amarum</i> (Raf.) H. Rock var. <i>amarum</i>	bitter sneezeweed	V	A	N	FACU	
<i>Helianthus annuus</i> L.	annual sunflower	V	A	N	FACU	
<i>Iva angustifolia</i> Nutt. ex DC.	marsh elder	V	A	N	UPL	x
<i>Liatris</i> sp.		O				
<i>Mikania scandens</i> (L.) Willd.	climbing hempvine	V	P	N	FACW	x
<i>Parthenium hysterophorus</i> L.	Santa Maria feverfew	O	A	I	FAC	
<i>Pyrrhopappus</i> sp.		V				
<i>Rudbeckia hirta</i> L.	black-eyed susan	V	P	N	FACU	x
<i>Verbesina virginica</i> L. var. <i>virginica</i>	frostweed	V	P	N	FACU	

BIGNONIACEAE

<i>Campsis radicans</i> (L.) Seem. ex Bureau	trumpetvine	V	P	N	FACU	
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BORAGINACEAE

Heliotropium indicum L. indian heliotrope O A I FACW x

BRASSICACEAE

Brassica rapa L. bird's rape V A I UPL x

Lepidium virginicum L. pepperweed V A I FACU

Rapistrum rugosum (L.) All. annual bastardcabbage V A I UPL x

CAMPANULACEAE

Triodanis biflora (Ruiz & Pav.)
Greene small venus' looking-glass V A N UPL x

CANNABACEAE

Celtis laevigata Willd. sugarberry V P N FAC x

CAPRIFOLIACEAE

Sambucus sp. O

Symphoricarpos orbiculatus
Moench coral-berry V P N FACU x

CONVOLVULACEAE

Dichondra sp. pony-foot V

Ipomoea cordatotriloba Dennst.
var. *torreyana* (A. Gray) D.
Austin cotton morning-glory V P N FAC x

CORNACEAE

Cornus drummondii C.A. Mey. roughleaf dogwood V P N FAC

CUCURBITACEAE

Cucumis melo L. ssp. *agrestis* wild cantelope V A I UPL x

CUSCUTACEAE

<i>Cuscuta</i> sp.	dodder	V	(x)				
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EUPHORBIACEAE

<i>Chamaesyce maculata</i> (L.) Small	spotted spurge	V		A	N	UPL	
<i>Chamaesyce serpens</i> (Kunth) Small	mat euphorbia	V		A	N	UPL	
<i>Croton capitatus</i> Michx. var. <i>capitatus</i>	hogwart	V		A	N	UPL	x
<i>Croton capitatus</i> Michx. var. <i>lindheimeri</i> (Engelm. & A. Gray) Müll. Arg.	wooly croton	V		A	N	UPL	x
<i>Croton monanthogynus</i> Michx.	prairie tea	V		A	N	UPL	x
<i>Croton</i> sp.		V		A		UPL	
<i>Euphorbia bicolor</i> Engelm. & A. Gray	snow on the prairie	O		A	N	UPL	x
<i>Triadica sebifera</i> (L.) Small	Chinese tallow	V	x	P	I	FAC	x

FABACEAE

<i>Amorpha fruticosa</i> L.	indigobush amorpha	V		P	N	FACW	x
<i>Baptisia bracteata</i> Muhl. Ex Elliott	longbract wild indigo	O		P	N	UPL	
<i>Baptisia</i> sp.	wild indigo	V		P	N		
<i>Chamaecrista fasciculata</i> (Michx.) Greene	partridge pea	V		A	N	FACU	
<i>Lathyrus pusillus</i> Elliott	tiny pea	V		A	N	FAC	
<i>Medicago polymorpha</i> L.	burclover	V		A	I	FACU	x
<i>Mimosa strigillosa</i> Torr. & A. Gray	powderpuff	V		P	N	FAC	
<i>Neptunia lutea</i> (Leavenworth) Benth.	yellow puffball	V		P	N	FACU	
<i>Parkinsonia aculeata</i> L.	retama, Jerusalem thorn	O		P	N	FAC	x
<i>Prosopis glandulosa</i> Torr.	honey mesquite	V		P	N	FACU	x
<i>Senna obtusifolia</i> (L.) Irwin & Barneby	sickle-pod	V		A	N	FACU	x
<i>Senna occidentalis</i> (L.) Link	coffee senna, septicweed	O		A/P	I	UPL	x
<i>Sesbania drummondii</i> (Rydb.) Cory	poisonbean	V		P	N	FACW	

<i>Sesbania herbacea</i> C (Mill.) McVaugh	bigpod sesbania	O	P	N	FACU	x
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<i>Vicia ludoviciana</i> Nutt.	vetch	V	A	I	UPL	
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FAGACEAE

<i>Quercus macrocarpa</i> Michx.	bur oak	V	P	N	FACU	x
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<i>Quercus marilandica</i> Münchh.	blackjack oak	V	P	N	UPL	x
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<i>Quercus shumardii</i> Buckley	Shumard red oak	V	P	N	FAC	x
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<i>Quercus stellata</i> Wangenh.	post oak	V	P	N	FACU	x
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<i>Quercus virginiana</i> Mill.	live oak	V	P	N	FACU	x
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GENTIANACEAE

<i>Centaurium texense</i> (Griseb.) Fernald	lady bird's centaury	O	A	N	OBL	x
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<i>Sabatia campestris</i> Nutt.	Texas star	V	A	N	FACU	x
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GERANIACEAE

<i>Geranium texanum</i> (Trel.) A. Heller	Texas geranium	V	A	N	UPL	x
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HALORAGACEAE

<i>Myriophyllum</i> sp.	watermilfoil	V	P			
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HYDROPHYLLACEAE

<i>Hydrolea ovata</i> Nutt. ex Choisy	blue waterleaf	O	P	N	OBL	x
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JUGLANDACEAE

<i>Carya illinoensis</i> (Wangenh.) K. Koch	pecan	V	P	N	FAC	x
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LAMIACEAE

<i>Lamium amplexicaule</i> L.	henbit deadnettle	V	P	N	UPL	x
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<i>Monarda citriodora</i> Cerv. ex Lag.	lemon beebalm	V	A	N	UPL	x
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<i>Physostegia intermedia</i> (Nutt.) Engelm. & A. Gray	marsh obedient plant, slender false dragonhead	O		P	N	OBL	x
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<i>Teucrium canadense</i> L.	Canada germander	O		P	N	FACW	x
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LYTHRACEAE

<i>Ammannia coccinea</i> Rottb.	valley redstem	V		A	N	OBL	x
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<i>Lythrum alatum</i> Pursh.	winged lythrum	O		P	N	OBL	x
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MALVACEAE

<i>Hibiscus laevis</i> All.	halberdleaf rosemallow	O		P	N	OBL	x
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<i>Malvastrum aurantiacum</i> (Scheele) Walp.	Wright's false mallow	V		P	N	UPL	x
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<i>Malvaviscus arboreus</i> Dill. ex Cav. var. <i>drummondii</i> (Torr. & A. Gray) Schery	turk's cap	V		P	N	UPL	
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<i>Sida spinosa</i> L.	prickly sida	V		A	N	UPL	x
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MELIACEAE

<i>Melia azedarach</i> L.	chinaberry	O	(x)	P	I	FACU	x
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MORACEAE

<i>Maclura pomifera</i> (Raf.) C.K. Schneid.	osage-orange	V		P	N	FACU	
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NYMPHAEACEAE

<i>Nymphaea odorata</i> Aiton subsp. <i>odorata</i>	white water lily	V		P	N	OBL	x
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OLEACEAE

<i>Forestiera acuminata</i> (Michx.) Poir.	swamp-privet	V		P	N	OBL	x
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<i>Fraxinus pennsylvanica</i> Marshall	green ash	V		P	N	FAC	x
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ONAGRACEAE

<i>Gaura parviflora</i> Dougl. ex Lehm.	smallflower gaura	V		A	N	UPL	x
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<i>Gaura</i> sp.		V					
<i>Ludwigia decurrens</i> Walter	primrose-willow	V	P	N	OBL	x	
<i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven	Mexican primrose	O	P	N	OBL	x	
<i>Ludwigia peploides</i> (Kunth) P.H. Raven	floating primrose-willow	V	P	N	OBL	x	
<i>Oenothera laciniata</i> Hill	cutleaf evening primrose	V	P	N	FACU	x	
<i>Oenothera speciosa</i> Nutt.	Mexico primrose	V	P	N	UPL		

OXALIDACEAE

<i>Oxalis articulata</i> Savigny subsp. <i>rubra</i> (A. St.-Hil.) Lourteig	windowbox woodsorrel	V	P	I	UPL	x
<i>Oxalis stricta</i> L.	yellow wood-sorrel	V	P	N	FACU	x

PASSIFLORACEAE

<i>Passiflora incarnata</i> L.	purple passionflower	V	P	N	UPL	x
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PHYTOLACCACEAE

<i>Phytolacca americana</i> L.	pokeberry	V	P	N	FACU	x
<i>Rivina humilis</i> L.	pigeon berry	V	P	N	FAC	x

PLANTAGINACEAE

<i>Bacopa monnieri</i> (L.) Pennell	coastal water-hyssop	V	P	N	OBL	x
<i>Plantago aristata</i> Michx.	bottlebrush plantain	V	A	N	UPL	x
<i>Plantago elongata</i> Pursh	slender plantain	V	A	N	FACW	x
<i>Plantago rhodosperma</i> Decne.	redseed plantain	V	A	N	FACU	x
<i>Plantago virginica</i> L.	paleseed plantain	V	A	N	UPL	x

POLYGONACEAE

<i>Polygonum glabrum</i> Willd.	denseflower knotweed	V	P	N	OBL	x
<i>Polygonum hydropiperoides</i> Michx.	swamp smartweed	V	P	N	UPL	
<i>Polygonum pensylvanicum</i> L.	Pennsylvania smartweed	V	A	N	UPL	
<i>Polygonum punctatum</i> Elliot	water smartweed	V	A	N	UPL	x

<i>Polygonum setaceum</i> Baldw.	bog smartweed	V	P	N	OBL	x
<i>Rumex crispus</i> L.	curly dock	V	P	I	FAC	x
<i>Rumex pulcher</i> L.	fiddle dock	V	P	I	FACW	x
<i>Rumex</i> sp.	dock	V				

PRIMULACEAE

<i>Anagallis arvensis</i> L.	scarlet pimpernel	V	A	I	UPL	
<i>Samolus ebracteatus</i> Kunth	limewater brookweed	V	P	N	FACW	x
<i>Samolus valerandi</i> L. subsp. <i>parviflorus</i> (Raf.) Hultén	seaside brookweed	V	P	N	UPL	x

RANUNCULACEAE

<i>Ranunculus sceleratus</i> L.	celery-leaved buttercup	V	P	N	OBL	x
<i>Ranunculus</i> sp.	buttercup	V				

ROSACEAE

<i>Crataegus</i> sp.		O				
<i>Rosa bracteata</i> J.C. Wendl.	Macartney rose	V	P	I	FACU	
<i>Rubus trivialis</i> Michx.	dewberry	O	P	N	FACU	x

RUBIACEAE

<i>Cephalanthus occidentalis</i> L.	common buttonbush	V	P	N	UPL	x
<i>Diodia virginiana</i> L.	Virginia buttonweed	V	P	N	OBL	x
<i>Galium tinctorium</i> (L.) Scop.	stiff marsh bedstraw	V	P	N	OBL	x

RUTACEAE

<i>Poncirus trifoliata</i> (L.) Raf.	trifoliolate orange	V	P	I	UPL	x
<i>Zanthoxylum clava-herculis</i> L.	hercules-club	V	P	N	FACU	x

SALICACEAE

<i>Populus deltoides</i> W. Bartram ex Marshall	eastern cottonwood	O	P	N	FAC	x
<i>Salix</i> sp.	willow	V				

SAPINDACEAE

<i>Sapindus saponaria</i> L.	soapberry	V	P	N	FACU	x
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SAPOTACEAE

<i>Sideroxylon lanuginosum</i> Michx.	chittamwood	V	P	N	FACU	x
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SOLANACEAE

<i>Capsicum annuum</i> L. var. <i>glabriusculum</i> (Dunal) Heiser & Pickersgill	cayenne pepper	V	P	N	UPL	x
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<i>Solanum elaeagnifolium</i> Cav.	silverleaf nightshade	V	P	N	UPL	x
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<i>Solanum pseudocapsicum</i> L.	Jerusalem cherry	V	P	I	UPL	x
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ULMACEAE

<i>Ulmus americana</i> L.	American elm	V	P	N	FAC	x
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<i>Ulmus crassifolia</i> Nutt.	cedar elm	V	P	N	FAC	x
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VERBENACEAE

<i>Lantana achyranthifolia</i> Desf.	brushland lantana	V	P	N	UPL	x
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<i>Lippia lanceolata</i> (Michx.) Greene	frogfruit	V	P	N	UPL	x
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<i>Lippia nodiflora</i> (L.) Greene	turkey tangle frogfruit	V	P	N	UPL	x
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<i>Verbena brasiliensis</i> Vell.	Brazilian vervain	V	P	I	UPL	
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<i>Verbena halei</i> Small	Texas vervain	V	P	N	UPL	
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<i>Vitex agnus-castus</i> L.	vitex	V	P	N	UPL	x
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VIOLACEAE

<i>Viola missouriensis</i> Greene	Missouri violet	O	A/P	N	FACW	
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VISCACEAE

<i>Phoradendron tomentosum</i> (DC.) Engelm. ex A. Gray	mistletoe	O	P	N	UPL	x
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VITACEAE

<i>Cissus trifoliata</i> (L.) L.	possum-grape	V	P	N	FACU	x
<i>Nekemias arborea</i> (L.) J. Wen & Boggan	peppervine	V	P	N	FAC	x
<i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia creeper	V	P	N	FACU	x
