

THE VASCULAR FLORA OF A WOODLAND PARK SITE IN EAST HARRIS COUNTY, TEXAS

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ABSTRACT

An annotated, vouchered checklist is provided of the vascular plant taxa of a 50 ha segment of Herman Brown Park, Houston, Harris County, Texas. Four hundred forty eight taxa are documented for the site, of which 361 are native and 87 are non native. Weedy species constitute 56% of the native species and 68% of the non natives, but only a few are highly invasive. The native and non native taxa are predominantly from the southeastern or eastern USA. The non native taxa are predominantly Asian or European in origin, and approximately 25% are from Central or South America.

RESUMEN

Se aporta un catálogo con anotaciones y testigos de taxa de plantas vasculares de un segmento de 50 ha del Herman Brown Park, Houston, Harris County, Texas. Se documentan cuatrocientas cuarenta y ocho taxa para el lugar, de las que 361 son nativas y 87 no nativas. Las especies de malas hierbas constituyen el 56% de las especies nativas y el 68% de las no nativas, pero sólo unas pocas son invasoras. Los taxa nativos son predominantemente del sureste o del este de Estados Unidos. Los taxa no nativos son principalmente de origen asiático o europeo, y aproximadamente el 25% son de América Central o Sur América.

INTRODUCTION

This inventory was conducted as part of a biological assessment of a potential site for the Botanic Garden of Houston, TX (BGH). The main goal was to document the flora of an urban natural area and to consider factors influencing its floristic composition. An additional goal was to provide a baseline for assessment of biodiversity changes wrought by development as a botanical garden.

Floristic richness of a site should be a function of the size, habitat diversity, and disturbance history of the site. The number of species should increase with site size and habitat diversity. Disturbance could eliminate some species while providing new habitat for others, so its influence is unclear. The BGH site is small (50 ha) and site conditions are relatively homogeneous. Negative impacts to the site include timber cutting, grazing, oilfield activity and pipeline construction, as well as dredging for Hunting Bayou flood control, and urbanization of the surrounding area. Furthermore, the site appears to have undergone considerable ecological change, from prairie and riparian woodland to closed forest following cessation of grazing and burning.

Site location should also affect the relative size of the flora, considering that the pool of potential non native invaders would be higher in an urban setting. For example, rural nature preserves typically have a small fraction of non natives. In nearby Texas nature preserves, the values are in the range of 5–6% (Fleming et al. 2002; Singhurst et al. 2003; MacRoberts et al. 2004; Brown et al. 2005). Few studies have been reported for urban natural areas in the US, but values range from 26% (Middlesex Fells, metropolitan Boston; Drayton and Primack 1996) to 40% (Pelham Bay Park, New York City; DeCandido et al. 2004). In regional floras the non native fraction is as high as 43% (Great Britain: Crawley et al. 1997) or even 60% for some islands (Wu et al. 2004). In Central Europe non natives comprise about 40% of the floras of 54 cities, and the fraction of non natives increases with city size and decreases with increasing latitude (Pysek 1998). More studies from American cities are necessary to determine whether similar trends exist.

In addition to being in an urban setting, the site under study is of interest because it contains a remnant

of a *Quercus similis* (bottomland post oak) woodland, a vegetation type that is poorly known ecologically and floristically. Also, it is located near the western boundary of the eastern deciduous forest biome where forests rapidly give way to woodlands, savannas, prairies and marshes moving west and south. In the northeast quadrant of Harris County, the forest communities resemble those of the outer coastal plain of the southeastern US, with an upland matrix of mixed pine-hardwood forest dissected by oak-gum bottomland hardwood forest. In the southwest quadrant, uplands are predominantly prairie while riparian zones are often dominated by *Quercus virginiana* (live-oak), *Q. nigra* (water oak), *Populus deltoides* (cottonwood), and *Celtis laevigata* (hackberry). The question addressed in this paper is whether an urban natural area near this ecotone might have elevated floristic richness since sources of post-disturbance colonists are more varied than they might be for a site within a uniform regional vegetation matrix. In addition, a substantial admixture of species with Western or Midwestern distributions may also occur.

To summarize, this paper focuses on the question of how the local flora reflects biogeography and human activity including whether there is a mix of species from different habitats and if the non native species ratio is high. The paper also establishes a baseline for investigating floristic change in an urban natural area.

SITE AND METHODS

The collection site was the section of Herman Brown Park (City of Houston, Harris County, TX) west of Hunting Bayou, herein called the Botanic Garden of Houston site. Herman Brown Park was acquired by the City of Houston in 1980. Land use at the BGH site has been varied. Deed records indicate timber sales in 1869. The site was later acquired by a local rancher and presumably grazed. Ages of canopy trees indicate that grazing ceased about 50 years ago. There are several abandoned oil wells on the site which appear to have been in operation from about 1937, when the Clinton Field was discovered, through the 1950s. Hunting Bayou was dredged for flood control purposes in the late 1940s, and a deep drainage ditch was constructed running east-west through the site. A residential subdivision was established on the south boundary of the site in 1952. The site is bordered on the north and west by pasture and industrial lands. The BGH is now predominantly wooded with two small mowed fields and several open drainage ditches.

The climate of the area is characterized by long hot summers and mild winters. Yearly average precipitation at Hobby Airport (3 km SW of the site) is 134.6 cm, well distributed throughout the year. Average annual temperature is approximately 21°C. January is the coldest month with mean daily temperatures of 12°C. July is the warmest month with highs averaging 34°C. The growing season is about 270 days (NCDC 2004).

Harris County lies within the Gulf Coastal Plain Physiographic Province (Fenneman 1938), which is a broad region of low relief stretching from the coast inland 100–150 miles and from Texas to western Georgia. Streams and rivers of the Gulf Coastal Plain drain into the Gulf of Mexico. The BGH site is situated on the Beaumont Geologic Formation (Shelby et al. 1993), a broad, flat, poorly drained sedimentary surface of sands and clays that appeared in the late Pleistocene when sea level was high during a warm interval (approximately 30–40,000 years ago) within the Wisconsin glacial period (Moore and Aronow 1994). The surface is cut, sometimes deeply, by shallow, short bayous draining into the Gulf of Mexico.

Houston is located on the edge of the Eastern Deciduous Forest Biome. The northern portion of the city is part of the Upper West Gulf Coastal Plain ecoregion (Weakley et al. 1998) often referred to as the Piney-woods (Gould 1975; Correll & Johnston 1970). In this ecoregion, *Quercus-Pinus* (oak-pine) forests dominate the landscape; stream and river bottoms are typically bottomland hardwood forest dominated by *Quercus* and *Liquidambar*. The southern portion of the city is part of the Gulf Prairies and Marshes ecoregion. In this ecoregion the original vegetation of the area was likely to have been mostly prairie, with bands of *Quercus-Pinus* forest on bluffs along bayous (Gould 1975; Correll & Johnston 1970) and *Ulmus americana*, *Fraxinus pennsylvanica*, and *Celtis laevigata* forest in the bottoms. Today, where native trees persist along drainages, *Quercus similis* Ashe (bottomland post oak) is sometimes one of the dominant oaks.

Three types of forest vegetation were identified at the site. On the flat uplands away from the bayou,

Ulmus americana, *Fraxinus pennsylvanica*, and *Celtis laevigata* dominate [National Vegetation Classification System (NVCS) type *Ulmus americana*-*Celtis laevigata*-*Fraxinus pennsylvanica* Forest (NatureServe 2005)]. *Ligustrum* spp. and *Ilex decidua* are important shrubs. In the ground layer, coverage by graminoids is high, especially *Carex* spp. The second vegetation type occurs on flats and bluffs nearer the bayou. *Q. similis* and *Pinus taeda* are dominant but bands of *Quercus phellos* follow shallow drains. *Ilex decidua* and *Ilex vomitoria* form dense patches, and non native *Ligustrum* species are abundant. Coverage of graminoids in the ground layer is low to moderate. The only NVCS type containing *Q. similis* as a dominant is the *Quercus phellos*-*Q. similis*/*Crataegus marshallii*-*C. spathulata*/*Chasmanthium laxum* Forest (NatureServe 2005). All of these species except *C. spathulata* occur on the site. However, *Pinus taeda* is a canopy dominant, and *C. laxum* is of only modest importance in the ground layer. The likely interpretation is that the site vegetation represents a seral stage of this NVCS type. The third vegetation type on the site is a narrow riparian strip in the deeply incised ravine of Hunting Bayou dominated by *Platanus occidentalis*, *Salix nigra*, and *Populus deltoides*.

Soils of the site are clays, clay loam, and fine sandy loams of several series with Lake Charles Clay and Aldine Very Fine Sandy Loam being the most widespread (SCS 1976). The soils are poorly drained and of low agricultural productivity.

Plant collections were made during parts of three growing seasons, from Oct 2004 to Dec 2006. The site was visited sporadically Oct–Dec 2004, at approximately two-week intervals during Feb–Dec 2005, and occasionally Feb–June 2006. Approximately 700 specimens were collected and deposited at Rice University. In most cases, the nomenclature follows Jones et al. (1997) and Kartesz and Meacham (1999). Some recent literature sources were followed, especially some nomenclatural adjustments published in *Flora of North America* volumes (FNA 1993+).

Nativity was defined as presence in North America north of Mexico and was determined using Kartesz and Meacham (2001). Origins of non natives were determined using a variety of web sources, including Flora North America Online (www.efloras.org), Purdue University Dept of Horticulture (www.hort.purdue.edu/newcrop), University of California Jepson Herbarium (www.ucjeps.berkeley.edu/interchange.html), Global Compendium of Weeds (www.hear.org/gcw), Plants for a Future (www.pfaf.org/database), and Floridata (<http://www.floridata.com>).

The non native species were divided into four categories, ruderals (weedy herbs of waste places, disturbed areas, and dry, sandy soils), garden weeds, ornamentals (plants that appeared to have arrived at the site by dumping or planting), and invasives (species naturalized in native forests, wetlands or prairies). Native species were classed as ruderals, forest and woodland species, species of natural open habitats (savannas and prairies), or wetland species. Assignment to categories was based on the primary habitat as given by Correll and Johnston (1970) and modified by our experience. Classification of weedy species followed Kartesz and Meacham (2001).

Three major sources were used to check for possible county or state records: Turner et al. (2003) Diggs et al. (2006), and the collection at SBSC.

RESULTS

The vascular flora of the BGH site consists of 448 taxa in 259 genera in 97 families. The list may be found in the Appendix which contains information on life form, nativity, distribution, introduction, original source, habitat, and weediness.

All of the families are Angiosperms except five: two Gymnosperms (Pinaceae, Cycadaceae) and three Pteridophytes (Lygodiaceae, Polypodiaceae, Thelypteridaceae). Nearly half the families are represented by a single species, with only 18 containing more than five species. The top four families contain more than one-third of the taxa. They are Asteraceae (59 taxa; 13.5%), Poaceae (57; 13.1 %), Cyperaceae (35; 7.6%), and Fabaceae (22; 5.0%). The largest genera are *Carex* (15 species), *Juncus* (9), *Cyperus* (9), *Euphorbia* (8), *Quercus* (7), and *Paspalum* (6).

More than half (54%) of the species are broad-leaved herbs (Monocots and Dicots). Graminoids are the

second most important element (23%), with the remainder being split relatively equally between trees (9%), shrubs (6%), and vines (8%).

The species are mostly of broad distribution with more than half being from the southern US (Table 1). Only 6% are found primarily in Texas; one, (*Rhynchospora indianolensis*) is endemic to the state and another (*Zephyranthes traubii*) is known only from coastal Texas and NE Mexico (FNA 1993+ vol 19:302; Kartesz and Meacham 1999; Diggs et al. 2006). None of the species is known to be threatened or endangered (TOES 1993), though *R. indianolensis* and *Z. traubii* are poorly collected (Kartesz and Meacham 2001). Species of predominantly drier regions (central and southwest US) make up a very small fraction of the flora (ca 6%). About one-third of the species are from highly disturbed habitats, being either ruderals, garden weeds or ornamentals (Table 2). Open-habitat species (prairie, field and savanna) are slightly more common than closed-habitat species (forest or woodland). Approximately 58% of the taxa are classified as weeds according to Kartesz and Meacham (2001). None are on the Federal list of noxious weeds (USDA 2006). Two species (*Alternanthera philoxeroides* and *Triadica sebifera*) are listed as noxious in Texas (Texas Administrative Code 2005)

We found one new state record, *Syngonium podophyllum* (per Kartesz & Meacham 2001; Jones & Wipff 2003). This is a horticultural species introduced from Mexico which we have observed growing wild in several areas but apparently has not yet been formally documented as an escape from cultivation. Five new county records were found. *Cestrum nocturnum* is listed in Jones & Wipff (2003) as cultivated only. The specimen reported here is the first documentation of an escaped Texas population of this species. *Eleocharis acicularis*, *Rhynchospora indianolensis*, *Triodanis lamprosperma*, and *Zephyranthes pulchella* are indicated as absent from Harris County by Turner et al. (2003). Another species, *Juncus elliottii*, is known for Harris County only from a specimen at New York Botanical Garden (Diggs et al. 2006) and from the specimen collected in this study.

Species noteworthy for their showiness include one orchid (*Spiranthes vernalis*), spider lily (*Hymenocallis liriosme*), a *Crinum* cultivar, and two species of rain lily (*Zephyranthes pulchella*, *Z. traubii*).

Most of the species (81%) are native to the United States. Of non native species, about 76% are of Old World origin, 24% are from Mexico or South America, and 4% are of undetermined origin. The major Old World locations are Asia (29%), Europe (14%), and Eurasia (10%). Only 3 of the species are African in origin (*Cynodon dactylon*, *Crinum bulbispermum* and *Dioscorea bulbifera*).

DISCUSSION

The taxon count of 448 for the BGH site is somewhat lower than counts for most other sites in the region (401–930 taxa; Table 3). However, considering the relative uniformity of the site, as well as the absence of native prairie or savanna with their characteristically rich ground layer, the BGH site is surprisingly rich. This very small site (<50 ha) contains nearly 10% of all the species found in Texas. Species richness surpasses that of the 125 ha Hickory Creek Unit of Big Thicket National Preserve, which is approximately 200 km to the east (MacRoberts et al. 2002).

One contributor to the relative species richness of the site is non natives. They comprise 19% of the flora (87 spp), a substantially larger fraction than the 4–13% for natural areas in the region (Table 3). The largest number of non native species are ruderals (43 spp.; e.g., *Duchesnea indica*, *Stellaria media*, *Euphorbia nutans*, *Lamium amplexicaule*) or garden weeds (*Dioscorea bulbifera*, *Fatoua villosa*, *Ipomoea quamoclit*, *Oxalis debilis* var. *corymbosa*, *Phyllanthus urinaria*) that are adapted to highly disturbed sites and are commonly found at BGH in mowed areas of fields or along trails, pipelines or ditches. A second group of non natives (n=15), mostly ornamentals, appears to owe its presence at the site to more direct human agency, probably dumping from nearby homes (*Canna xgeneralis*, *Cestrum nocturnum*, *Citrus aurantium*, *Crinum bulbispermum*, *Cycas revoluta*, *Iris* sp., *Kalanchoe* sp., *Lycoris radiata*, *Mirabilis jalapa*, *Musa* sp., *Philodendron hederaceum* var. *oxycardium*, *Tradescantia pallida*, *Yucca* sp.). *Cyrtomium falcatum* (holly fern) appears to have arrived via floodwaters from upstream and *Pyracantha koidzumi* apparently germinated from bird-transported seed. The final group of non native species (n=22) appear to be naturalized components of native forests and prairies. This group

TABLE 1. Geographic distributions within USA of taxa at the BGH site (generalized from Kartesz & Meacham 2001).

	Number	Fraction
Central	16	0.04
East	80	0.18
South	82	0.18
Southeast	155	0.35
Southwest	8	0.02
TX	29	0.06
USA	73	0.16
Ornamental	5	0.01
Grand Total	448	1.00

TABLE 2. Numbers of taxa for which each listed habitat was considered to be the primary habitat (after Correll & Johnston 1970).

	Number	Fraction
Forest	119	0.27
Prairie, field, savanna	140	0.31
Wetland	50	0.11
Ruderal	114	0.25
Ornamental	15	0.03
Garden weed	6	0.01
Unknown	4	0.01
Total	448	1.00

TABLE 3. Species richness, total area and fraction non native for selected natural areas.

Site	Species	Area (ha)	Fraction Non native	Source
Botanic Garden of Houston, Harris Co., TX	446	50	0.19	This study
Hickory Creek Unit, BTNP, Tyler Co., TX	401	284	0.04	MacRoberts et al. 2002
Turkey Creek Unit, BTNP, Polk and Tyler Co., TX	738	3150	0.06	Brown et al. 2004
Big Branch NWR, St Tammany Parish, LA	563	5870	0.13	Rosen et al. 2003
Big Lake Bottom WMA, Anderson Co., TX	459	1685	0.05	Fleming et al. 2002
Gus Engeling WMA, Anderson Co., TX	930	4465	0.06	Singhurst et al. 2002
Middlesex Fells, Boston, MA	400	69	0.26	Drayton & Primack 1998
Pelham Bay Pk, New York City, NY	956		0.34	DeCandido & Lamont 2004
Highland Hts Community Pk, Cuyahoga County, OH	403	141	0.35	Jog et al. 2005
Shaker Median Park, Beachwood, Cuyahoga Co. OH	298	140	0.47	Delong et al. 2005

includes both herbaceous and woody plants (including shrubs and vines), some of which appear to be highly invasive locally. The most aggressive invaders at the BGH site are *Paederia*, *Lygodium*, *Ligustrum* spp, and *Triadica*. *Paederia* is very dense in parts of the BGH site, and it has been reported to be extremely aggressive at another nearby site (Brown 1992).

Ecologically, the non native flora differs from the native flora of the site in several ways. A slightly larger percentage of the non-natives is widely distributed in the USA (26%) than natives (14%) and more of the non native species are weedy and/or ruderal (68%) than natives (56%). Habitat designations are strongly skewed to disturbed sites and waste areas for non natives (56%) as opposed to natives (20%). It is also worth noting that the contribution of non native species from Latin America is substantially higher at BGH (21%)

than has been reported farther north (Central New York; 3%), as would be expected, considering location and climate.

Although the non natives are important at the BGH site, the non native percentage (19%) is somewhat lower than reported in other urban preserves (26–47%). Perhaps the percentage is lower because most of the site is either closed forest or frequently-mowed parkland. Areas of early successional vegetation are quite small. Also, urbanization has been more recent around the BGH site than around the other urban preserves listed in Table 3, so non native species may still be accumulating at the site. If insufficient time has passed for the full complement of non natives to have colonized the site, then it may explain lack of a southward increase in the fraction of non natives such as the trend identified by Pysek (1998) for central European cities. Clearly, more published data on the floras of urban preserves are required to identify important trends and their causes.

Generally speaking, a large fraction of the non native flora of the USA arrived via purposeful introduction for ornamentals, gardens, crops, forage or soil stabilization (Mack and Lonsdale 2001; Reichard and White 2001). For example, 49% of the non native flora of the Cayuga region of NY was planted at some time in that region or elsewhere in the USA (Marks et al. 2006). This appears true of the BGH site, as well. A substantial fraction (41%) of the non native species appear to have been introduced for some specific human use. The most notorious Texas example of escape from cultivation is *Triadica sebifera* (Chinese tallow tree), originally introduced as an ornamental by Benjamin Franklin, and subsequently as a potential oil-seed crop by the US Bureau of Plant Industry (Bruce et al. 1997).

Aside from non native plants, another important cause of high richness at the BGH site is the large percentage of native weeds (45% of the site flora). While weediness generally has a negative connotation, it must be emphasized that native weeds are a heterogeneous group, including not only native ruderals that are mostly restricted to disturbed and waste areas such as *Erigeron philadelphicus*, *Helianthus annuus*, and *Euphorbia nutans* (12% of the flora), but also many forest, prairie or marsh species that, because of broad ecological tolerances, high fecundity, and wide dispersal, are good colonizers of disturbed areas (32% of the flora), and consequently are present in many forest types. This latter group includes several important canopy dominant trees at the site, including *Ulmus*, *Celtis*, *Pinus*, and *Fraxinus*.

The importance of weediness is illustrated by the fact that, combining natives and non natives, 58% of flora is classed as weeds according to Kartesz and Meacham (2001). The weedy nature of the flora highlights, in turn, the long history of human use for grazing and logging and its role in determining species richness. Following cessation of burning and grazing nearly 50 years ago, there was ample opportunity for vagile members of native communities to colonize the site.

The final class of species that constitute the flora is non-weedy species that are commonly associated with less-disturbed habitats, and by definition are less fecund, vagile, or tolerant of a range of conditions than those species classified as weedy. They amount to 36% of the flora, and include species of both forested and non-forested habitats. The most notable forest species in this class is *Quercus similis*, one of the original site dominants which remains important. Many species of prairies and marshes (43% of the flora) are still present, but the prairie imprint has undoubtedly been substantially diluted by succession of prairie to forest on the western part of the site.

It is interesting to note that few species in the flora of the site have predominantly Western or Mid-western distributions. We found only one woody species that is more typical of drier regions to the west (*Maclura pomifera*) than to the humid region to the east. Other species such as *Symphoricarpos orbiculatus*, *Sapindus drummondii*, and *Acacia farnesiana*, which are present in the Houston area, were absent at this site. The prominence of eastern and southeastern taxa was previously identified for another protected area approximately 200 km North (MacRoberts and MacRoberts 2004). Together the results support the finding of MacRoberts and MacRoberts (2003) that the broad transition from eastern to western floras begins just west of Houston. Consequently, in spite of marked differences in appearance of the plant communities and the landscape across the transition from forest to prairies and woodlands that occurs in Houston, the flora

remains predominantly Eastern. The richness of the flora of the site does not appear to be a result of mixing of species from different habitats or different regions.

With respect to disturbance, our results show that the list of habitat generalists is large and site heterogeneity is low, and so the effect of disturbance is to offer opportunity for weedy species to colonize and persist. Thus, richness is high because of the abundance of native and non native weedy species that tend to be habitat generalists of broad distribution.

These observations on the BGH site clearly illustrate the importance of weeds and non natives in modern urban floras. Because of this and the low abundance of habitat specialists, there seems little risk of harm through escape of additional non natives. Indeed, the opportunity exists to enhance diversity by controlling woody invasives and by reintroducing elements of the prairie vegetation that once occupied part of the site.

APPENDIX

Ecological characteristics of taxa at Herman Brown Park, Houston, Harris County, Texas. Column heads are as follows: **F**=life form; **O**=origin; **D**=Distribution in US; **I**=reason for introduction; **H**=habitat; **W**=weed status; **C**=specimen collection numbers (I.S.Elsik & W.W. Pruess unless otherwise noted). See below for key to column entries.

FAMILY	F	O	D	I	H	W	C
Acanthaceae							
<i>Dicliptera brachiata</i> (Pursh) Spreng.	H	N	SE		F	N	4602
<i>Hygrophila lacustris</i> (Schlecht. & Cham.) Nees	H	N	SE		P	W	4432
<i>Justicia ovata</i> (Walter) Lindau var. <i>lanceolata</i> (Chapm.) R.W. Long	H	N	SE		F	N	4161
<i>Ruellia caroliniensis</i> (J.F. Gmel.) Steud.	H	N	E		P	W	4282, 4434
<i>Ruellia nudiflora</i> (Engelm. & A. Gray) Urb.	H	N	TX		P	N	4445
Aceraceae							
<i>Acer negundo</i> L.	T	N	US		F	W	4187
Agavaceae							
<i>Yucca aloifolia</i> L.	S	N	SE	O	Or	N	4490, 4660
<i>Yucca</i> sp. L.	S				Or		4665
Alismataceae							
<i>Sagittaria platyphylla</i> (Engelm.) J.G. Sm.	H	N	SE		W	W	4429, 4304
Amaranthaceae							
<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	H	SA	S	U	R	W	4165
Anacardiaceae							
<i>Toxicodendron radicans</i> (L.) Kuntze	V	N	E		F	W	4146, 4561
Apiaceae							
<i>Bowlesia incana</i> Ruiz & Pav.	H	N	SW		R	W	4094
<i>Centella erecta</i> (L. f.) Fernald	H	N	SE		R	W	4276
<i>Chaerophyllum tainturieri</i> Hook.	H	N	TX		P	W	4426
var. <i>dasycarpum</i> Hook. ex S. Wats							
<i>Chaerophyllum tainturieri</i> Hook. var. <i>tainturieri</i>	H	N	S		P	W	4064
<i>Cyclospermum leptophyllum</i> (Pers.) Sprague ex Britton & Wilson	H	SA	S	A	F	W	4266, 4202
<i>Cynosciadium digitatum</i> DC.	H	N	SE		P	N	4308
<i>Eryngium hookeri</i> Walp.	H	N	TX		P	N	4450
<i>Hydrocotyle verticillata</i> Thunb.	H	N	S		W	N	4265
var. <i>triradiata</i> (A. Rich.) Fernald							
<i>Hydrocotyle verticillata</i> Thunb. var. <i>verticillata</i>	H	N	S		W	N	4170
<i>Limnoscium pumilum</i> (Engelm. & A. Gray) Mathias & Constance	H	N	SE	O	F	W	4193
<i>Ptilimnium capillaceum</i> (Michx.) Raf.	H	N	E		W	W	4310
<i>Sanicula canadensis</i> L.	H	N	E		F	N	4159
<i>Torilis arvensis</i> (Huds.) Link	H	EA	S	A	R	W	4209
<i>Trepocarpus aethusae</i> Nutt. ex DC.	H	N	SE		P	W	4377

FAMILY	F	O	D	I	H	W	C
Apocynaceae							
<i>Trachelospermum difforme</i> (Walter) A. Gray	V	N	E		F	W	4531
Aquifoliaceae							
<i>Ilex decidua</i> Walter	S	N	SE		F	W	4103
<i>Ilex opaca</i> Aiton	T	N	SE		F	N	4685
<i>Ilex vomitoria</i> Aiton	S	N	SE		F	W	4132
Araceae							
<i>Colocasia esculenta</i> (L.) Schott	H	P	SE	O	F	W	4466
<i>Philodendron hederaceum</i> (Jacq.) Schott var. <i>oxycardium</i> (Schott) Croat	V	SA	C	O	Or	N	4644
<i>Syngonium podophyllum</i> Schott	V	SA	SE	A	F	N	4538
<i>Xanthosoma sagittifolium</i> (L.) Schott	H	SA	TX	O	F	N	4444
Araliaceae							
<i>Hedera helix</i> L.	V	EA	SE	O	F	W	4333
Arecaceae							
<i>Sabal minor</i> (Jacq.) Pers.	S	N	SE		F	W	4301
Asclepiadaceae							
<i>Asclepias viridis</i> Walter	H	N	SE		P	W	4376
<i>Matelea gonocarpus</i> (Walter) Shinnars	V	N	SE		F	N	4381, 4307
Asteraceae							
<i>Acmella oppositifolia</i> (Lam.) Jansen var. <i>repens</i> (Walter) Jansen	H	N	SE		W	N	4535
<i>Ageratina altissima</i> (L.) King & H. Rob.	H	N	E		P	W	4648
<i>Ambrosia psilostachya</i> DC.	H	N	US		P	W	4585
<i>Ambrosia trifida</i> L.	H	N	US		R	W	4428
<i>Arnoglossum ovatum</i> (Walter) H. Rob.	H	N	SE		P	N	4449
<i>Baccharis halimifolia</i> L.	S	N	E		P	W	4591, 4590
<i>Bidens bipinnata</i> L.	H	N	E		P	W	4575
<i>Calyptocarpus vialis</i> Less.	H	N	S		W	W	4070
<i>Cirsium horridulum</i> Michx.	H	N	S		P	W	4183
<i>Cirsium texanum</i> Buckley	H	N	C		R	N	4321
<i>Conoclinium coelestinum</i> (L.) DC.	H	N	E		F	W	4052
<i>Conyza canadensis</i> (L.) Cronquist var. <i>canadensis</i>	H	N	US		R	W	4424, 4417
<i>Coreopsis tinctoria</i> Nutt.	H	N	US		P	W	4395
<i>Eclipta prostrata</i> (L.) L.	H	N	S		W	W	4481, 4245
<i>Elephantopus carolinianus</i> Raeusch.	H	N	SE		F	N	4031
<i>Erigeron philadelphicus</i> L.	H	N	US		R	W	4068
<i>Erigeron tenuis</i> Torr. & A. Gray	H	N	S		R	N	4081, 4812
<i>Eupatorium capillifolium</i> (Lam.) Small	H	N	SE		R	W	4635
<i>Eupatorium semiserratum</i> DC.	H	N	SE		P	N	4472
<i>Eupatorium serotinum</i> Michx.	H	N	E		R	W	4027
<i>Eupatorium X pinnatifidum</i> Elliott	H	N	SE		R	W	4634
<i>Euthamia leptcephala</i> (Torr. & A. Gray)	H	N	SE		P	N	4586
Greene ex Porter & Britton							
<i>Gaillardia aestivalis</i> (Walter) H. Rock var. <i>aestivalis</i>	H	N	SE		P	N	4494
<i>Gamochaeta coarctata</i> (Willd.) Kerguelen	H	N	S		P	N	4230, 4200
<i>Gamochaeta purpurea</i> (L.) Cabrera	H	N	E		P	W	4092, 4198
<i>Helenium flexuosum</i> Raf.	H	N	E		R	W	4271
<i>Helianthus annuus</i> L.	H	N	US		R	W	4309
<i>Helianthus simulans</i> E.E. Wats.	H	N	TX		P	N	4589
<i>Heterotheca subaxillaris</i> (Lam.) Britton & Rusby	H	N	S		P	W	4447, 4129
<i>Hypochaeris microcephala</i> (Sch. Bip.) Cabrera var. <i>albiflora</i> (Kuntze) Cabrera	H	SA	TX	A	R	N	4084, 4199
<i>Iva angustifolia</i> Nutt. ex DC.	H	N	S		P	N	4636
<i>Iva annua</i> L.	H	N	C		W	W	4584
<i>Krigia cespitosa</i> (Raf.) K.L. Chambers forma <i>cespitosa</i>	H	N	S		P	W	4190, 4126

FAMILY	F	O	D	I	H	W	C
<i>Krigia cespitosa</i> (Raf.) K.L. Chambers	H	N	S		P	W	4172
forma <i>gracilis</i> (DC.) K.J. Kim							
<i>Lactuca floridana</i> (L.) Gaertn.	H	N	E		P	W	4506, 4587
<i>Mikania scandens</i> (L.) Willd.	V	N	E		P	W	4402
<i>Packera tampicana</i> (DC.) C. Jeffrey	H	N	SE		P	W	4156
<i>Pluchea camphorata</i> (L.) DC.	H	N	SE		P	W	4452, 4599
<i>Pluchea foetida</i> (L.) DC.	H	N	SE		P	N	4608
<i>Pluchea odorata</i> (L.) Cass.	H	N	S		P	W	4034
<i>Pterocaulon virgatum</i> (L.) DC.	H	N	TX		P	N	4632
<i>Pyrrhopappus pauciflorus</i> DC.	H	N	TX		P	N	4087
<i>Rudbeckia amplexicaulis</i> Vahl	H	N	SE		P	N	4264
<i>Rudbeckia hirta</i> L.	H	N	US		R	W	4367
<i>Rudbeckia texana</i> (Perdue) P.B. Cox & Urbatsch	H	N	SE		P	N	4407, 4505
<i>Solidago canadensis</i> L.	H	N	US		R	W	4656, 4013
<i>Solidago gigantea</i> Aiton	H	N	US		P	W	4597
<i>Solidago stricta</i> Aiton	H	N	SE		P	N	4631
<i>Soliva sessilis</i> Ruiz & Pav.	H	SA	SE	A	R	W	4201
<i>Sonchus asper</i> (L.) Hill	H	E	US	A	R	W	4086
<i>Symphytotrichum divaricatum</i> (Nutt.) G.L. Nesom	H	N	C		R	W	4629
<i>Symphytotrichum dumosum</i> (L.) G.L. Nesom	H	N	SE		P	N	4315
<i>Symphytotrichum lanceolatum</i> (Willd.)	H	N	C		P	N	4658
G.L. Nesom var. <i>lanceolatum</i>							
<i>Symphytotrichum racemosum</i> (Elliott) G.L. Nesom	H	N	E		P	N	4058
<i>Symphytotrichum subulatum</i> (Michx.) G.L. Nesom	H	N	E		R	W	4037
<i>Taraxacum erythrospermum</i> Andrz. ex Besser	H	C	US	A	R	W	4102
<i>Verbesina virginica</i> L.	H	N	S		P	W	4543
<i>Vernonia missurica</i> Raf.	H	N	S		P	N	4015
<i>Youngia japonica</i> (L.) DC.	H	As	S	A	R	W	4083, 4077
Betulaceae							
<i>Carpinus caroliniana</i> Walter	T	N	E		F	N	4389
Bignoniaceae							
<i>Campsis radicans</i> (L.) Seem.	V	N	E		F	W	4366
<i>Catalpa bignonioides</i> Walter	T	N	E		F	N	4387
Boraginaceae							
<i>Heliotropium procumbens</i> Mill.	H	N	SE		R	W	4461
<i>Myosotis macrosperma</i> Engelm.	H	N	E		F	N	4082
Brassicaceae							
<i>Brassica juncea</i> (L.) Czern.	H	As	US	A	R	W	4150
<i>Cardamine debilis</i> D. Don	H	P	S	A	R	N	4096, 4409
<i>Lepidium virginicum</i> L.	H	N	E		R	W	4215
Bromeliaceae							
<i>Tillandsia usneoides</i> (L.) L.	H	N	SE		F	N	4262, 4113
Cactaceae							
<i>Opuntia</i> sp. (L.) Mill.	S		TX		P		4489
Callitrichaceae							
<i>Callitriche heterophylla</i> Pursh	H	N	US		W	N	4176, 4242
Campanulaceae							
<i>Lobelia appendiculata</i> A. DC. var. <i>appendiculata</i>	H	N	E		F	W	4673
<i>Lobelia puberula</i> Michx.	H	N	E		P	N	4568
<i>Triodanis lamprosperma</i> McVaugh	H	N	S		P	N	4224
<i>Triodanis perfoliata</i> (L.) Nieuwl. var. <i>biflora</i> (Ruiz & Pav.) T.R. Bradley	H	N	US		R	W	4167
Cannaceae							
<i>Canna x generalis</i> L.H. Bailey	H		E	O	Or	N	4596
Caprifoliaceae							
<i>Lonicera japonica</i> Thunb.	V	As	E	O	F	W	4144

FAMILY	F	O	D	I	H	W	C
<i>Sambucus nigra</i> L. subsp. <i>canadensis</i> (L.) R. Bolli	S	N	US		F	N	4356
<i>Viburnum dentatum</i> L.	S	N	E		F	N	4340
Caryophyllaceae							
<i>Cerastium glomeratum</i> Thuill.	H	EA	US	A	R	W	4088
<i>Sagina decumbens</i> (Ell.) Torr. & A. Gray	H	N	SE		R	W	4243
<i>Stellaria media</i> (L.) Vill.	H	C	US	A	R	W	4069
Clusiaceae							
<i>Hypericum hypericoides</i> Crantz	S	N	E		P	W	4471, 4035
Commelinaceae							
<i>Commelina caroliniana</i> Walter	H	N	SE		F	N	4628
<i>Commelina diffusa</i> Burm.f. var. <i>diffusa</i>	H	N	S		F	N	4600
<i>Commelina erecta</i> L.	H	N	E		R	W	4662
<i>Gibasis pellucida</i> (M. Martens & Galeotti) D.R. Hunt	H	SA	SE	O		N	4443
<i>Tradescantia pallida</i> (Rose) D.R. Hunt	H	SA	SE	O	Or	N	4642
Convolvulaceae							
<i>Dichondra carolinensis</i> Michx.	H	N	S		R	W	4136
<i>Ipomoea cordatotriloba</i> Dennst. var. <i>cordatotriloba</i>	V	N	SE		R	W	4504
<i>Ipomoea quamoclit</i> L.	V	SA	S	O	G	W	*
Cornaceae							
<i>Cornus drummondii</i> C.A. Mey.	S	N	E		P	N	4155
<i>Cornus foemina</i> Mill.	S	N	S		W	N	4311
<i>Nyssa sylvatica</i> Marsh.	T	N	E		F	N	4360
Crassulaceae							
<i>Kalanchoe</i> cv. <i>Adans.</i>	H			O	Or	N	4643
Cycadaceae							
<i>Cycas revoluta</i> Thunb.	S	As	SE	O	Or	N	4580
Cyperaceae							
<i>Carex caroliniana</i> Schwein.	G	N	S		F	N	4229
<i>Carex cherokeensis</i> Schwein.	G	N	SE		F	W	4101
<i>Carex complanata</i> Torr. & Hook.	G	N	SE		F	N	4305
<i>Carex corrugata</i> Fernald	G	N	SE		F	N	4285
<i>Carex flaccosperma</i> Dewey	G	N	SE		F	N	4147, 4272
<i>Carex frankii</i> Kunth	G	N	S		P	W	4415, 4292
<i>Carex intumescens</i> Rudge	G	N	E		P	N	4100, 4353
<i>Carex leavenworthii</i> Dewey	G	N	E		P	N	4223
<i>Carex louisianica</i> L.H.Bailey	G	N	SE		P	W	4249
<i>Carex lupulina</i> Muhl. ex Willd.	G	N	E		P	W	4687
<i>Carex oxylepis</i> Torr. & Hook.	G	N	SE		F	W	4231
<i>Carex reniformis</i> Small	G	N	SE		P	N	4284
<i>Carex retroflexa</i> Muhl. ex Willd.	G	N	E		F	W	4226
<i>Carex triangularis</i> Boeckeler	G	N	SE		P	W	4268, 4287
<i>Carex tribuloides</i> Wahlenb.	G	N	E		W	N	4251
<i>Cyperus croceus</i> Vahl	G	N	SE		P	W	4363, 4550
<i>Cyperus enterianus</i> Boeckeler	G	SA	SE	A	F	W	4051
<i>Cyperus esculentus</i> L.	G	N	US		R	W	4624
<i>Cyperus ochraceus</i> Vahl	G	N	SE		W	N	4612, 4059
<i>Cyperus odoratus</i> L.	G	N	US		P	W	4577
<i>Cyperus pseudovegetus</i> Steud.	G	N	SE		P	W	4253
<i>Cyperus retrorsus</i> Chapm.	G	N	SE		P	W	4574
<i>Cyperus thyrsoiflorus</i> Schltld.	G	N	SE		F	N	4355, 4548
<i>Cyperus virens</i> Boeckeler	G	N	SE		P	W	4234
<i>Eleocharis acicularis</i> (L.) Roem. & Schult.	G	N	US		W	N	4263, 4293
<i>Eleocharis montana</i> Roem. & Schult.	G	N	SW		W	N	4252
<i>Eleocharis montevidensis</i> Kunth	G	N	SW		P	N	4236, 4253
<i>Fimbristylis dichotoma</i> Vahl	G	N	SE		P	W	4578

FAMILY	F	O	D	I	H	W	C
<i>Fimbristylis miliacea</i> Vahl	G	N	SE		P	N	4462
<i>Kyllinga brevifolia</i> Rottb.	G	N	S		R	W	4238, 4482
<i>Kyllinga odorata</i> Vahl	G	N	SE		P	N	4579
<i>Rhynchospora caduca</i> Ell.	G	N	SE		P	N	4278
<i>Rhynchospora corniculata</i> (Lam.) A. Gray	G	N	SE		P	W	4288
<i>Rhynchospora indianolensis</i> Small	G	N	TX		P	N	4283, 4519
<i>Scleria oligantha</i> Michx.	G	N	S		P	N	4365
Dioscoreaceae							
<i>Dioscorea bulbifera</i> L.	V	Af	S	O	G	W	4351
Ebenaceae							
<i>Diospyros virginiana</i> L.	T	N	C		F	W	4259, 4194
Euphorbiaceae							
<i>Acalypha gracilens</i> A. Gray	H	N	E		P	W	4459
<i>Acalypha rhomboidea</i> Raf.	H	N	E		P	W	4416
<i>Croton capitatus</i> Michx. var. <i>lindheimeri</i> (Engelm. & A. Gray) Muell.-Arg.	H	N	SE		R	W	4394, 4457
<i>Croton monanthogynus</i> Michx.	H	N	C		P	W	4397
<i>Euphorbia bicolor</i> Engelm. & A. Gray	H	N	S		P	N	4475
<i>Euphorbia dentata</i> Michx.	H	N	E		P	W	4148
<i>Euphorbia heterophylla</i> L.	H	N	S		P	W	4540
<i>Euphorbia maculata</i> L.	H	N	US		P	W	4463
<i>Euphorbia nutans</i> Lag.	H	N	E		R	W	4458, 4507
<i>Euphorbia prostrata</i> Aiton	H	N	S		R	W	4241
<i>Euphorbia serpens</i> Kunth	H	N	US		R	W	4559
<i>Euphorbia spathulata</i> Lam.	H	N	US		R	W	4130
<i>Phyllanthus pudens</i> L.C. Wheeler	H	N	S		R	N	4562
<i>Phyllanthus urinaria</i> L.	H	As	SE	A	G	W	4547
<i>Ricinus communis</i> L.	H	M	US	O	F	N	4556
<i>Triadica sebifera</i> (L.) Small	T	Ch	SE	C	F	W	4258, 4588
Fabaceae							
<i>Albizia julibrissin</i> Durazz.	T	Ch	S	O	P	W	4373
<i>Cercis canadensis</i> L. var. <i>canadensis</i>	T	N	E		F	N	4419
<i>Chamaecrista fasciculata</i> (Michx.) Greene	H	N	E		R	W	4024, 4440
<i>Desmanthus virgatus</i> (L.) Willd.	H	N	TX		P	W	4011
<i>Desmodium glabellum</i> DC.	H	N	SE		F	N	4645, 4570
<i>Desmodium paniculatum</i> (L.) DC.	H	N	E		F	N	4510, 4647
<i>Erythrina herbacea</i> L.	S	N	SE		F	N	4649
<i>Gleditsia triacanthos</i> L.	T	N	US		F	N	4653, 4542
<i>Glottidium vesicarium</i> R.M. Harper	H	N	SE		R	W	4512
<i>Kummerowia striata</i> (Thunb. ex Murray) Schindl.	H	As	S	F	R	W	4565
<i>Lathyrus pusillus</i> Ell.	V	N	S		P	W	4151
<i>Medicago polymorpha</i> L.	H	EA	US	A	R	W	4079
<i>Mimosa strigillosa</i> Torr. & A. Gray	H	N	SE		P	W	4341
<i>Neptunia pubescens</i> Benth.	H	N	SE		P	N	4396
<i>Rhynchosia minima</i> (L.) DC.	V	N	SE		P	N	4573
<i>Sesbania drummondii</i> (Rydb.) Cory	S	N	SE		P	W	4385
<i>Sesbania herbacea</i> (Mill.) McVaugh	H	N	S		P	W	4621
<i>Strophostyles helvola</i> (L.) Elliott	V	N	E		P	W	4508, 4509
<i>Trifolium incarnatum</i> L.	H	E	E	C	R	W	4207
<i>Trifolium repens</i> L.	H	As	US	C	R	W	4116
unknown	V						4652, 4557, 4661
<i>Vicia minutiflora</i> D. Dietr.	H	N	SE		P	N	4143
<i>Vicia tetrasperma</i> (L.) Schreb.	H	E	E	F	R	W	4080
Fagaceae							
<i>Quercus alba</i> L.	T	N	E		F	N	4553

FAMILY	F	O	D	I	H	W	C
<i>Quercus falcata</i> Michx.	T	N	E		F	N	4532
<i>Quercus laurifolia</i> Michx.	T	N	SE		F	N	4674
<i>Quercus nigra</i> L.	T	N	SE		F	N	4479
<i>Quercus phellos</i> L.	T	N	SE		F	N	4133, 4464
<i>Quercus similis</i> Ashe	T	N	SE		F	N	4609, 4603
<i>Quercus virginiana</i> Mill.	T	N	SE		F	N	4500
Gentianaceae							
<i>Centaurium pulchellum</i> (Sw.) Druce	H	E	E	A	R	N	4260
<i>Sabatia campestris</i> Nutt.	H	N	TX		P	N	4298
Geraniaceae							
<i>Geranium carolinianum</i> L.	H	N	US		R	W	4063
Haloragaceae							
<i>Myriophyllum pinnatum</i> (Walter)	H	N	S		W	W	4289
Britton, Sterns & Poggenb.							
<i>Proserpinaca palustris</i> L. var. <i>amblyogona</i> Fernald	H	N	E		W	W	4303
Hamamelidaceae							
<i>Liquidambar styraciflua</i> L.	T	N	E		P	N	4124
Hydrophyllaceae							
<i>Hydrolea ovata</i> Nutt.	H	N	SE		W	W	4412
<i>Hydrolea uniflora</i> Raf.	H	N	SE		W	W	4403
Iridaceae							
<i>Herbertia lahue</i> (Molina) Goldblatt	H	N	TX		F	N	4164
<i>Iris</i> sp. L.	H						4484
<i>Sisyrinchium langloisii</i> Greene	H	N	TX		R	N	4131
<i>Sisyrinchium minus</i> Engelm. & A. Gray	H	N	TX		P	N	4180
<i>Sisyrinchium rosulatum</i> E.P. Bicknell	H	N	SE		R	N	4163, 4141
Juglandaceae							
<i>Carya illinoensis</i> K. Koch	T	N	C		F	N	4386
Juncaceae							
<i>Juncus acuminatus</i> Michx.	G	N	US		W	W	4233
<i>Juncus bufonius</i> L.	G	N	US		W	W	4244
<i>Juncus diffusissimus</i> Buckley	G	N	SE		P	N	4290
<i>Juncus effusus</i> L.	G	N	C		P	W	4185
<i>Juncus elliotii</i> Chapm.	G	N	SE		P	N	4257
<i>Juncus marginatus</i> Rostk.	G	N	SE		P	N	4392, 4227
<i>Juncus repens</i> Michx.	G	N	SE		P	N	4313
<i>Juncus tenuis</i> Willd.	G	N	US		F	W	4306, 4221
<i>Juncus validus</i> Coville	G	N	SE		P	W	4404
Lamiaceae							
<i>Hedeoma hispida</i> Pursh	H	N	US		P	W	4273
<i>Lamium amplexicaule</i> L.	H	EA	US	A	R	W	4122
<i>Lycopus rubellus</i> Moench.	H	N	SE		F	N	4607
<i>Lycopus virginicus</i> L.	H	N	E		F	N	4025
<i>Micromeria brownei</i> Benth.	H	N	SE		F	N	4317
<i>Monarda citriodora</i> Cerv. ex Lag.	H	N	US		P	W	4339
<i>Prunella vulgaris</i> L.	H	N	E		R	W	4191
<i>Salvia coccinea</i> Juss. Ex Murr.	H	N	SE		P	N	4676
<i>Salvia lyrata</i> L.	H	N	E		F	W	4076
<i>Scutellaria drummondii</i> Benth.	H	N	SW		R	N	4378
<i>Scutellaria parvula</i> Michx.	H	N	E		R	N	4177, 4127
<i>Stachys crenata</i> Phil.	H	N	TX		F	N	4089
<i>Teucrium canadense</i> L.	H	N	US		W	W	4026, 4354
Lemnaceae							
<i>Lemna aequinoctialis</i> Welw.	H	N	S		W	W	4483, 4473
<i>Spirodela punctata</i> (G. Mey.) C.H. Thomps.	H	N	SE		W	W	4299

FAMILY	F	O	D	I	H	W	C
Lentibulariaceae							
<i>Utricularia gibba</i> L.	H	N	E		W	W	4314
Liliaceae							
<i>Allium canadense</i> L. var. <i>canadense</i>	H	N	E		P	N	4075
<i>Allium canadense</i> L. var. <i>mobile</i> (Regel) Ownbey	H	N	SE		P	N	4186
<i>Crinum bulbispermum</i> (Burm.)	H	Af	SE	O	Or	N	4686, 4641
Milne-Redh. & Schweick.							
<i>Hymenocallis liriosme</i> (Raf.) Shinners	H	N	SE		P	N	4312
<i>Lycoris radiata</i> Herb.	H	Ch	SE	O	Or	N	4536
<i>Nothoscordum bivalve</i> (L.) Britton	H	N	S		R	W	4074
<i>Zephyranthes pulchella</i> J.G. Sm.	H	N	S		P	N	4534, LB30762
<i>Zephyranthes traubii</i> (Hayward) Moldenke	H	N	TX		P	N	4515
Linaceae							
<i>Linum medium</i> (Planch.) Britton	H	N	US		W	N	4295, 4493
var. <i>texanum</i> (Planch.) Fernald							
Loganiaceae							
<i>Gelsemium sempervirens</i> (L.) Aiton	V	N	SE		P	W	4119
<i>Mitreola petiolata</i> (Gmel.) Torr. & A. Gray	H	N	SE		P	N	4522
<i>Polypremum procumbens</i> L.	H	N	S		R	W	4640
Lygodiaceae							
<i>Lygodium japonicum</i> (Thunb.) Sw.	V	As	SE	A	F	W	4323
Lythraceae							
<i>Ammannia coccinea</i> Rottb.	H	N	S		W	W	4142
<i>Lagerstroemia indica</i> L.	S	As	SE	O	P	W	4425
<i>Lythrum alatum</i> Pursh var. <i>lanceolatum</i> (Ell.) Torr. & A. Gray ex Rothrock	H	N	SE		W	W	4393
Magnoliaceae							
<i>Magnolia grandiflora</i> L.	T	N	SE		F	N	4324
Malvaceae							
<i>Malvaviscus arboreus</i> Cav. var. <i>drummondii</i> (Torr. & A. Gray) Schery	S	N	SE		P	N	4350
<i>Modiola caroliniana</i> (L.) G. Don	H	N	S		R	W	4152
<i>Sida rhombifolia</i> L.	H	N	S		P	W	4071, 4296
<i>Sida spinosa</i> L.	H	N	E		R	W	4572
Meliaceae							
<i>Melia azedarach</i> L.	T	As	S	O	F	W	4418
Menispermaceae							
<i>Cocculus carolinus</i> DC.	V	N	SE		F	W	4357
Moraceae							
<i>Fatoua villosa</i> Nakai	H	As	S	A	G	W	4485
<i>Maclura pomifera</i> (Raf.) C.K. Schneid.	T	N	US		P	W	4604
<i>Morus alba</i> L.	T	Ch	US	O	F	W	4567
<i>Morus rubra</i> L.	T	N	C		F	W	4106
Musaceae							
<i>Musa</i> sp. L.	H			O	Or	N	4488
Myricaceae							
<i>Myrica cerifera</i> L.	S	N	SE		P	W	4406
Nyctaginaceae							
<i>Mirabilis jalapa</i> L.	H	SA	SW	O	Or	W	4486
Oleaceae							
<i>Chionanthus virginicus</i> L.	T	N	SE		F	N	4437, 4362
<i>Forestiera ligustrina</i> Poir.	S	N	SE		F	N	4539, 4325
<i>Fraxinus americana</i> L.	T	N	E		F	W	4216
<i>Fraxinus berlandieriana</i> DC.	T	N	SW		F	W	4560, 4382
<i>Fraxinus pennsylvanica</i> Marshall	T	N	C		F	W	4173, 4411

FAMILY	F	O	D	I	H	W	C
<i>Ligustrum lucidum</i> Aiton	S	As	SE	O	W	W	4623
<i>Ligustrum sinense</i> Lour.	S	As	SE	O	F	W	4192
Onagraceae							
<i>Gaura lindheimeri</i> Engelm. & A. Gray	H	N	TX		P	N	4503, 4492
<i>Gaura parviflora</i> Dougl. ex Lehm.	H	N	US		R	W	4427
<i>Ludwigia decurrens</i> Walter	H	N	E		W	W	4521
<i>Ludwigia glandulosa</i> Walter	H	N	SE		W	N	4281
<i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven	H	N	SE		W	W	4018
<i>Ludwigia palustris</i> (L.) Elliott	H	N	US		W	W	4212, 4430
<i>Oenothera speciosa</i> Nutt.	H	N	S		P	W	4162
Orchidaceae							
<i>Spiranthes vernalis</i> Engelm. & A. Gray	H	N	E		P	N	4294
Oxalidaceae							
<i>Oxalis corniculata</i> L. var. <i>wrightii</i> (A. Gray) B.L. Turner	H	N	C		R	N	4014
<i>Oxalis debilis</i> Kunth var. <i>corymbosa</i> (DC.) Lourteig	H	SA	SE	O	G	W	4062
<i>Oxalis violacea</i> L.	H	N	US		P	W	4555
Passifloraceae							
<i>Passiflora incarnata</i> L.	V	N	SE		F	W	4516
<i>Passiflora lutea</i> L.	V	N	SE		F	N	4474
Phytolaccaceae							
<i>Phytolacca americana</i> L.	H	N	E		F	W	4442
Pinaceae							
<i>Pinus taeda</i> L.	T	N	SE		F	W	4491
Plantaginaceae							
<i>Plantago rhodosperma</i> Dcne.	H	N	S		P	N	4091, 4134
<i>Plantago virginica</i> L.	H	N	US		R	W	4160
Platanaceae							
<i>Platanus occidentalis</i> L.	T	N	E		F	W	4361
Poaceae							
(Walter) Britton, Sterns & Poggenb.	G	N	E		R	W	4181, 4197
<i>Andropogon glomeratus</i> (Walter) Britton, Sterns & Poggenb. var. <i>pumilus</i> (Vasey) L.H. Dewey	G	N	S		P	W	4593, 4657
<i>Andropogon virginicus</i> L.	G	N	S		R	W	4619
<i>Aristida purpurascens</i> Poir. var. <i>virgata</i> (Trin.) Allred	G	N	SE		P	W	4620
<i>Avena sativa</i> L.	G	E	US	C	R	W	4208
<i>Bothriochloa ischaemum</i> (L.) Keng var. <i>songarica</i> (Rupr. ex Fisch. & C.A. Mey.) Celarier & Harlan	G	As	SW	F	R	W	4639
<i>Bothriochloa longipaniculata</i> (Gould) Allred & Gould	G	N	TX		P	N	4371
<i>Briza minor</i> L.	G	E	S	A	F	W	4178
<i>Bromus catharticus</i> Vahl	G	SA	US	F	R	W	4120
<i>Chasmanthium latifolium</i> (Michx.) H.O. Yates	G	N	S		F	N	4528
<i>Chasmanthium laxum</i> (L.) H.O. Yates var. <i>laxum</i>	G	N	SE		F	N	4438
<i>Chasmanthium laxum</i> (L.) H.O. Yates var. <i>sessiliflorum</i> (Poir.) Wipff & S.D. Jones	G	N	SE		F	N	4467
<i>Chloris canterai</i> Arech.	G	SA	TX	U	R	N	4368
<i>Cynodon dactylon</i> (L.) Pers.	G	Af	US	F	R	W	4267
<i>Dichantherium acuminatum</i> (Sw.) Gould & C.A. Clark var. <i>densiflorum</i> (E.L. Rand & Redfield) Gould & C.A. Clark	G	N	E			N	LB30549
<i>Dichantherium commutatum</i> (Schult.) Gould subsp. <i>commutatum</i>	G	N	S		P	N	4109
<i>Dichantherium acuminatum</i> (Sw.) Gould & C.A. Clark var. <i>lindheimeri</i> (Nash) Gould & C.A. Clark	G	N	E		R	N	4157, 4274
<i>Dichantherium dichotomum</i> (L.) Gould subsp. <i>microcarpon</i> (Muhl. ex Ell.) Freckmann & Lelong	G	N	E		P	N	4246, 4614

FAMILY	F	O	D	I	H	W	C
<i>Dichanthelium dichotomum</i> (L.) Gould	G	N	E		P	N	LB30556
subsp. <i>roanokense</i> (Ashe) Freckmann & Lelong							
<i>Dichanthelium laxiflorum</i> (Lam.) Gould	G	N	SE		P	N	4256, 4364
<i>Dichanthium aristatum</i> (Poir.) C.E. Hubb.	G	I	S	F	R	N	4622
<i>Digitaria ciliaris</i> (Retz.) Koeler	G	N	S		R	N	4514
<i>Echinochloa colonum</i> (L.) Link	G	I	S	A	R	W	4423
<i>Echinochloa muricata</i> (P.Beauv.) Fernald	G	N	US		R	W	4204, 4627
<i>Echinochloa walteri</i> (Pursh) in A. Heller	G	N	E		P	W	4530
<i>Eleusine indica</i> (L.) Gaertn.	G	EA	US	A	R	W	4626
<i>Elymus virginicus</i> L.	G	N	C		P	W	4149
<i>Eragrostis intermedia</i> Hitchc.	G	N	S		P	N	4513
<i>Hordeum pusillum</i> Nutt.	G	N	US		R	W	4093
<i>Leersia virginica</i> Willd.	G	N	E		F	N	4280
<i>Lolium perenne</i> L.	G	EA	US	C	R	W	4179
<i>Melica mutica</i> Walter	G	N	SE		F	N	4108
<i>Oplismenus hirtellus</i> (L.) Beauv. subsp.	G	N	SE		F	N	4551
<i>setarius</i> (Lam.) Mez							
<i>Panicum anceps</i> Michx.	G	N	SE		F	W	4615
<i>Panicum dichotomiflorum</i> Michx.	G	N	US		R	W	4571
<i>Panicum gymnocarpon</i> Elliott	G	N	SE		W	N	4520
<i>Panicum rigidulum</i> Bosc ex Nees	G	N	S		W	W	4480, 4446
<i>Paspalum dilatatum</i> Poir.	G	SA	S	F	R	W	4145
<i>Paspalum langei</i> (E. Fourn.) Nash	G	N	SE		F	N	4254, 4222
<i>Paspalum lividum</i> Trin. Ex Schltdl.	G	N	TX		W	N	4451
<i>Paspalum notatum</i> Flueggé	G	SA	S	F	R	W	4239
<i>Paspalum pubiflorum</i> Rupr.	G	N	S		R	N	4237
<i>Paspalum urvillei</i> Steud.	G	SA	SE	F	R	W	4320, 4659
<i>Phalaris caroliniana</i> Walter	G	N	S		R	W	4300
<i>Poa annua</i> L.	G	E	US	A	R	W	4073
<i>Polypogon monspeliensis</i> (L.) Desf.	G	E	US	A	R	W	4211
<i>Saccharum giganteum</i> (Walter) Pers.	G	N	SE		W	W	4633
<i>Schizachyrium scoparium</i> (Michx.) Nash	G	N	SE		P	N	4616
var. <i>divergens</i> (Hack.) Gould							
<i>Setaria parviflora</i> (Poir.) Kerguélen	G	N	S		R	W	4331, 4433
<i>Sorghum halepense</i> (L.) Pers.	G	M	US	F	R	W	4196
<i>Sphenopholis obtusata</i> (Michx.) Scribn.	G	N	US		R	W	4203
<i>Sporobolus compositus</i> Merr. var. <i>drummondii</i>	G	N	TX		R	N	4569
(Trin.) J. Kartesz & Gandhi							
<i>Sporobolus indicus</i> (L.) R. Br.	G	SA	SE	A	R	N	4286
<i>Steinchisma hians</i> (Elliott) Nash	G	N	SE		W	N	4189, 4401
<i>Stenotaphrum secundatum</i> (Walter) Kuntze	G	N	SE		G	W	4335
<i>Tridens strictus</i> Nash	G	N	SE		F	W	4617
<i>Urochloa reptans</i> (L.) Stapf	G	N	TX		R	W	4455
Polygalaceae							
<i>Polygala verticillata</i> L.	H	N	C		P	N	4277
Polygonaceae							
<i>Brunnichia ovata</i> (Walter) Shinnars	V	N	SE		F	W	4527, 4653, 4672
<i>Polygonum densiflorum</i> Meisn.	H	N	SE		W	N	4554
<i>Polygonum hydropiperoides</i> Michx.	H	N	US		W	W	4175, 4020
<i>Rumex crispus</i> L.	H	E	US	A	R	W	4319
Polypodiaceae							
<i>Cyrtomium falcatum</i> (L. f.) C. Presl	F	As	US	O	Or	N	4663
<i>Polygonum punctatum</i> Elliott	H	N	US		W	W	4630
<i>Pleopeltis polypodioides</i> (L.) E.G. Andrews &	F	N	SE		F	N	4670
Windham subsp. <i>michauxiana</i> (Weatherby)							
E.G. Andrews & Windham							

FAMILY	F	O	D	I	H	W	C
Pontederiaceae							
<i>Heteranthera limosa</i> Vahl	H	N	C		W	W	4408
Portulacaceae							
<i>Portulaca oleracea</i> L.	H	N	US		P	W	4460
Primulaceae							
<i>Anagallis arvensis</i> L.	H	E	US	A	R	W	4090
<i>Anagallis minima</i> (L.) K. Krause	H	N	US		P	W	4302, 4228
<i>Samolus valerandi</i> L. subsp. <i>parviflorus</i> (Raf.) Hultén	H	N	US		W	N	4316
Ranunculaceae							
<i>Anemone berlandieri</i> Pritz.	H	N	SE		P	W	4135
<i>Clematis crispa</i> L.	H	N	S		P	N	4110, 4469
<i>Clematis terniflora</i> DC.	V	J	E	O	R	N	4439
<i>Ranunculus muricatus</i> L.	H	E	S	A	R	W	4078
<i>Ranunculus pusillus</i> Poir.	H	N	S		R	W	4125
<i>Ranunculus sardous</i> Crantz	H	E	SE	A	P	W	4112
Rhamnaceae							
<i>Berchemia scandens</i> (Hill) K. Koch	V	N	SE		F	W	4085, 4174
Rosaceae							
<i>Crataegus marshallii</i> Eggl.	T	N	SE		F	W	4104
<i>Crataegus viridis</i> L.	T	N	SE		F	N	4105, 4275
<i>Duchesnea indica</i> (Andrews) Focke	H	As	E	O	R	W	4114
<i>Prunus caroliniana</i> (P. Mill.) Ait.	T	N	SE		F	N	JC3
<i>Pyracantha koidzumii</i> (Hayata) Rehd.	S	As	SE	O	Or	N	4558
<i>Rubus argutus</i> Link	V	N	S		R	W	4061
<i>Rubus trivialis</i> Michx.	V	N	SE		R	W	4552
Rubiaceae							
<i>Diodia virginiana</i> L.	H	N	SE		P	W	4332
<i>Galium aparine</i> L.	H	N	US		F	W	4065
<i>Galium tinctorium</i> L.	H	N	E		W	N	4072, 4138
<i>Houstonia pusilla</i> Schoepf	H	N	S		R	N	4107
<i>Mitchella repens</i> L.	H	N	E		F	N	JC1
<i>Paederia foetida</i> L.	V	As	TX	O	F	W	4405, 4345, 4655
<i>Sherardia arvensis</i> L.	H	M	E	A	R	W	4118
Rutaceae							
<i>Citrus aurantium</i> L.	T	As	SE	C	Or	N	4526
<i>Zanthoxylum clava-herculis</i> L.	T	N	SE		F	W	4217, 4400
Salicaceae							
<i>Populus deltoides</i> subsp. <i>deltoides</i> Bartram ex Marshall	T	N	US		F	W	4206
<i>Salix nigra</i> Marshall	T	N	E		F	W	4115, 4117
Sapotaceae							
<i>Sideroxylon lanuginosum</i> Michx.	T	N	S		F	N	4487, 4359, 4370
Scrophulariaceae							
<i>Agalinis heterophylla</i> (Nutt.) Small	H	N	SE		P	N	4592, 4646
<i>Bacopa monnieri</i> (L.) Pennell	H	N	S		W	W	4166
<i>Gratiola virginiana</i> L.	H	N	S		W	N	4169
<i>anagallidea</i> (Michx.) Cooperr.							
<i>Mazus pumilus</i> (Burm. f.) Steenis	H	EA	S	A	P	W	4261
<i>Mecardonia procumbens</i> Small	H	N	SW		W	N	4171
<i>Penstemon tenuis</i> Small	H	N	TX		P	N	4153
<i>Veronica arvensis</i> L.	H	EA	US	A	P	W	4095, 4128
<i>Micranthemum umbrosum</i> (J.F. Gmel.) S.F. Blake	H	N	SE		W	W	4210
<i>Veronica peregrina</i> L. subsp. <i>peregrina</i>	H	N	US		P	N	4139
<i>Veronica persica</i> Poir.	H	As	US	A	R	W	4137
Smilacaceae							
<i>Smilax bona-nox</i> L.	V	N	SE		F	W	4399, 4601

FAMILY	F	O	D	I	H	W	C
<i>Smilax rotundifolia</i> L.	V	N	E		F	W	4523
<i>Smilax smallii</i> Morong	V	N	SE		F	W	4111
Solanaceae							
<i>Calibrachoa parviflora</i> (Jussieu) D'Arcy	H	N	S		P	W	4240
<i>Cestrum nocturnum</i> L.	S	SA	TX	O	Or	N	4689, 4598
<i>Solanum capsicastrum</i> Link ex Schauer	S	U	S	O	R	N	4010, 4067
<i>Solanum carolinense</i> L.	H	N	US		R	W	4184
<i>Solanum ptychanthum</i> Dun.	H	N	US		R	W	4012
Sterculiaceae							
<i>Melochia pyramidata</i> L.	H	N	TX		R	N	4625
Thelypteridaceae							
<i>Thelypteris kunthii</i> (Desv.) C.V. Morton	F	N	SE		F	N	4420, 4650
Typhaceae							
<i>Typha domingensis</i> Pers.	H	N	US		W	W	4338
<i>Typha latifolia</i> L.	H	N	US		W	W	4337
Ulmaceae							
<i>Celtis laevigata</i> Willd.	T	N	US		F	W	4501, 4097
<i>Ulmus alata</i> Michx.	T	N	E		F	W	4529
<i>Ulmus americana</i> L.	T	N	E		F	W	4098, 4517
<i>Ulmus crassifolia</i> Nutt.	T	N	S		F	N	4654, 4390
Urticaceae							
<i>Boehmeria cylindrica</i> (L.) Sw.	H	N	E		F	W	4476
Valerianaceae							
<i>Valerianella woodsiana</i> Walp.	H	N	SE		F	W	4066
Verbenaceae							
<i>Callicarpa americana</i> L.	S	N	SE		P	W	4478, 4336
<i>Lantana camara</i> L.	S	N	SE		R	W	4441, 4391
<i>Phyla nodiflora</i> (L.) Greene	H	N	S		R	W	4372
<i>Verbena brasiliensis</i> Vell.	H	SA	S	A	R	W	4195
<i>Verbena halei</i> Small	H	N	S		F	N	4297
<i>Verbena xutha</i> Lehm.	H	N	S		R	N	4495
Violaceae							
<i>Viola sororia</i> Willd. var. <i>missouriensis</i> (Greene) McKinney	H	N	C		F	W	4318
Viscaceae							
<i>Phoradendron serotinum</i> (Raf.) M.C. Johnston subsp. <i>serotinum</i>	H	N	SE		P	N	4322
Vitaceae							
<i>Ampelopsis arborea</i> Koehne	V	N	SE		R	W	4422, 4344
<i>Ampelopsis cordata</i> Michx.	V	N	SE		F	W	4421, 4270
<i>Parthenocissus quinquefolia</i> (L.) Planch	V	N	E		F	W	4380
<i>Vitis cinerea</i> (Engelm.) Millardet var. <i>cinerea</i>	V	N	S		F	N	4497, 4269
<i>Vitis mustangensis</i> Buckley	V	N	TX		R	W	4021
<i>Vitis rotundifolia</i> Michx.	V	N	SE		F	W	4398

Life form. Tree (**T**); shrub or subshrub (**S**); vine (**V**); broad-leaved herb (Monocot or Dicot) (**H**); graminoid (**G**); fern (**F**).

Origin. United States (**N**); Asia (**As**); Africa (**Af**); cosmopolitan (**C**); China (**Ch**); Europe (**E**); Eurasia (**Ea**); India (**I**); Japan (**J**); Mediterranean (**M**); South America (**SA**).

Distribution. Throughout US (**US**); mostly limited to Texas (**TX**); Southern (**S**); Southeastern (**SE**); Southwestern (**SW**); Eastern (**E**); Central (**C**).

Introduction reason. Accidental arrival (**A**); Crop (**C**); forage (**F**); ornamental (**O**); ; unknown (**U**).

Habitat. Forest or woodland (**F**); prairie, field or savanna (**P**); wetland (**W**); ruderal (**R**); garden weed (**G**); ornamental (**Or**).

Weed status. Weedy (**W**); non-weedy (**N**) per Kartesz & Meacham (2001).

Collection Number. All specimens were collected by I.S. Elsik & W.W. Pruess, except for a few collected by L. Brown denoted by (LB) or Jeremy Caves (JC). *One species, *Ipomoea quamoclit*, is listed as sight record only.

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