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Larry Allain
USGS National Wetlands Research Center

Latimore Smith
The Nature Conservancy

Charles Allen
Colorado State Fort Polk Station

Malcolm F. Vidrine
Louisiana State University - Eunice

James B. Grace
USGS National Wetlands Research Center, gracej@usgs.gov

A Floristic Quality Assessment System for the Coastal Prairie of Louisiana

by Larry Allain[1], Latimore Smith[2], Charles Allen[3], Malcolm F. Vidrine[4] and James B. Grace[1]

[1] *USGS National Wetlands Research Center, 700 Cajundome Blvd, Lafayette, Louisiana 70506; larry_allain@usgs.gov*
[2] *The Nature Conservancy, Louisiana Field Office, P.O. Box 4125, Baton Rouge, Louisiana 70821*
[3] *Colorado State Fort Polk Station, Fort Polk, LA 71459*
[4] *Division of Sciences, Louisiana State University at Eunice, Eunice, Louisiana 70535*

Abstract

Evaluation systems to assess the biotic integrity of plant communities exist for some ecosystems, but not the increasingly rare coastal prairies of Louisiana. A list of plant species occurring in Louisiana's coastal prairie was created and coefficients of conservatism (C) were assigned for each species. A Floristic Quality Index (FQI), which is calculated using the C values provided by a panel of experts, can be used to evaluate prairie remnants and restorations. We assigned C values from 0–10 based on their estimated degree of association with prairies of various levels of natural quality and their tolerance of disturbance. Those species given a rank of 0–3 are deemed to be colonizing species found in a variety of habitats and are adapted to fairly severe disturbance. Species with C values of 4–6 are those that are often common in fairly high-quality coastal prairie, occur in other community types and are moderately tolerant of disturbance. Species with rankings of 7–8 are associated with high quality natural prairie habitat and slight disturbance. Those species ranking 9–10 are those restricted to very high-quality habitat and have a high fidelity to coastal prairie.

Unlike FQI systems devised for other areas, we also weight the coefficients assigned to nonnative species found in coastal prairie. We believe that the presence of exotic species in a native plant community lowers the conservation value of that community. Consequently, we assigned C values from –1 to –3 to nonnative species based on the perceived threat of their invasive potential and ability to exclude native species. Including the C values of exotic species allows the calculation of an adjusted floral quality index that provides an additional dimension to floristic quality analysis. This index will be of value to restorationists, managers and others involved in assessing the integrity of natural areas and developing management strategies based on these criteria.

Keywords: Floristic Quality Assessment, Floristic Quality Index, Adjusted Floristic Quality Index, Cajun Prairie, coastal prairie, Louisiana, succession, restoration

Introduction

The coastal prairie of Louisiana is near extirpation. Much of the original 2.5 million acres (1 million ha) of tallgrass prairie that once covered the southwestern part of the state has been converted to rice and sugarcane cultivation. Removal of native grazers, disruption of hydrology, alteration of historical fire regimes and agricultural/urban development have drastically changed the landscape. What is left totals less than 445 acres (180 ha) (Allain and others 2004), or 0.0002% of the pre-settlement extent, and these remnants vary greatly in their ecological integrity and floristic quality. Plant species that are adapted to disturbed habitats are now dominant in South Louisiana and many of the species associated with presettlement prairie are becoming increasingly rare.

Interest in conservation of Louisiana's coastal prairie is growing rapidly. University and government agency researchers are beginning to address such issues as ecology, genetics, plant life history, grassland birds, insect pollinators, freshwater mussels and soil characteristics. In addition to performing research, universities, government agencies and private organizations are also working to conserve genetic diversity by developing native ecotype plant materials for restoration. A coalition of these entities is working to conserve remnants and restore prairie. Government regulatory agencies are charged with the responsibilities of permitting and developing performance standards and mitigation criteria for restoration efforts. Numbers of private individuals are collecting seeds and plants for commercial production. In fact, interest in coastal prairie restoration is growing more rapidly than are resources. Efforts to select remnants for preservation, to plan and monitor restorations, to select species for conservation and seed increase programs, and to make management decisions have exposed a need for habitat assessment standards.

Currently a number of methods are used to quantify prairie vegetation quality. Some of these methods include species richness; presence of nonnative species; ratio of woody/graminoid vegetation; number of rare, threatened or endangered species; diversity of physiognomic, wetness and conservatism guilds; average plot species richness; species

richness index; and floristic quality assessment (Taft 1997, Bowles and others 2000). Few of these methods have been applied in Louisiana. Projects to date rely on botanists to provide subjective, non-quantitative opinions of habitat quality based on the presence of rare plants, exotic plants, and species that experts consider to be 'indicator species'.

Using the presence of native plant species as indicators in a community, Swink and Wilhelm (1979, 1994) devised a quantitative measure of naturalness called Floristic Quality Assessment (FQA) for the Chicago area. Based on the assumption that vegetation in a community responds predictably to disturbance history, species composition is used as an indicator of naturalness (Taft and others1997). Floristic quality analysis systems have since been developed for Missouri (Heumann and others 1993), Ohio (Andreas and Lichvar 1995), Ontario (Oldham and others 1995), Michigan (Herman and others 1997), the Dakotas (Northern Great Plains Floristic Quality Assessment Panel 2001), and Wisconsin (Bernthal 2003). In this work we assigned coefficients of conservatism to Louisiana's coastal prairie flora, adapted and modified the FQA methodology, and supplied additional data useful in applying other methods of floristic assessment.

Location

Known locally as the Cajun Prairie, this ecosystem is a mid-grass to tallgrass prairie bordered on the south by coastal wetlands and the north by longleaf pine flatwoods. It occurs on soils classified as alfisols, represented primarily by the Crowley and Midland series. These soils have sandy, sandy-loam and silt-loam surfaces with clayey, slowly permeable subsoil. Organic matter content ranges from 1.0–2.5% and the soil reaction is usually between pH 5.0 and 6.0. Prairies occurring on alfisols often have mima mounds (also referred to as "pimple mounds"), which are topographic features composed of sandy loam soil that vary from 2–20 m (2–22 yd) across and up to 1.5-m tall (1.6-yd) (Cain 1974, Smeins and others 1992). Prairie soils are generally saturated during the winter rainy period and suffer drought during the low rainfall summer months.

Little bluestem (*Schizachyrium scoparium*) and Indiangrass (*Sorghastrum nutans*) dominate the plant community with switchgrass (*Panicum virgatum*) and eastern gamagrass (*Tripsacum dactyloides*) becoming dominant in low areas. Big bluestem (*Andropogon gerardii*) is present in moist, sandy soils but it is less common than in Midwestern tallgrass prairie (Smeins and others 1992). Species such as brown-seed paspalum (*Paspalum plicatulum*), slender bluestem (*Schizachyrium tenerum*) and ashy sunflower (*Helianthus mollis*) are restricted to the upper coastal prairie and are not found elsewhere in tallgrass prairie. A varied forb component fills out this grass matrix, creating one of North America's most diverse ecosystems. It is considered to be one of the most endangered plant communities in North America (Diamond and others 1992).

The table of species presented in Appendix 1 is the result of various independent studies of over 26 prairie remnants in six parishes (Acadia, Allen, Calcasieu, Cameron, Davis, Jefferson and Vermillion) of southwest Louisiana. These remnants, in combination with a few small, inaccessible remnants, are all that remain of the coastal prairie of Louisiana. Most remnants are small, occur along railroads and represent upland prairie. Those present along railroads are generally wet prairies that occur adjacent to freshwater marsh.

Early succession species, identified in restorations conducted in the coastal prairie, were also included in Appendix 1. Five restorations were studied in Louisiana, including (1) a 6-acre (2.4-ha) restoration near Eunice (Cajun Prairie Restoration), (2) a 365-acre (148-ha) restoration north of Eunice (Durald), (3) a 3-acre (1.2-ha) site at University of Louisiana at Lafayette's Center for Ecology and Environmental Technology research center near Lafayette (CEET), (4) a 5-acre (2-ha) planting at Lacassine National Wildlife Refuge (Lacassine), and (5) a 110-acre (48-ha) restoration near Gueydan (Gueydan).

Methods

Coefficients of Conservatism

Previous FQA systems have been based on all plant communities occurring in a given area, such as the Chicago area (Swink and Wilhelm 1994), northern Ohio (Andreas and Lichvar 1995), and Illinois (Taft and others 1997). This work concentrates on the coastal prairie community and is restricted to the historic range of coastal prairie in Louisiana. A list of plant species occurring in coastal prairie remnants was created based on the work of the authors (Grace and others 2000, Allen and others 2001, Louisiana Wildlife and Fisheries Natural Heritage Program 1995 – unpublished report). Disturbance and nonnative species occurring in prairie restorations and degraded prairie remnants were also included in our analysis (Allain and Grace - unpublished).

Native species were assigned a coefficient of conservatism (C) on a scale of 0–10 based upon their degree of fidelity to remnant coastal prairies and their tolerance of disturbance. Those species with high community fidelity are limited in the number of communities in which they occur and are considered indicator species. The C value represents the authors' confidence that a plant was collected in a high quality prairie remnant. A species with a C of 10 (conservative species) indicates that we are 100% certain that, if it came from southwest Louisiana, it was growing on a coastal prairie. A species with a C of 0 (early succession or disturbance species) indicates no confidence that a plant came from a prairie remnant.

In addition to community fidelity, plant species assigned high C values are also considered to be intolerant of disturbance. A C value of 0–1 indicates an early succession species adapted to severe disturbance, where as a C value of 8–10 indicates a species from a community that has little history of disturbance. A species with a C value of 5 represents a plant from a remnant natural community that may be severely degraded.

In this project, we felt that some consideration of nonnative species could be helpful, though this has not been the practice in other such analyses. Nonnative plant species were

assigned coefficients by Swink and Wilhelm in the third edition of their book "Plants of the Chicago Region" (1979), but this practice was abandoned in later additions. Others have included nonnatives but assigned them a C of 0, making them equivalent to native disturbance-associated species (Herman and others 1997, Andreas 1995, Northern Great Plains Floristic Quality Assessment Panel 2001). Wilhelm (Swink and Wilhelm 1994) states that introduced plants were not part of the native landscape and values assigned to them would necessarily be arbitrary. However, some introduced plants have the potential to alter their habitat, thus displacing native species. Other nonnatives, while not visibly altering their habitat, are indicators of disturbance. Still other nonnatives, representing a small and apparently benign portion of the flora of a site, lower the relative conservation value of that site when compared to a similar site not yet infested. Consequently, we assigned nonnative plant species coefficient values from –1 to –3. A coefficient of –1 indicates a species that does not occur on prairie remnants of significant natural quality. A C value of –2 was assigned to species that can become established in prairie but are not invasive and do not exclude other species. Those species that both invade prairie and displace native species were given a value of –3.

Coefficients were based primarily on the authors' experience with coastal prairie flora. Sources such as herbarium specimens, distribution maps (Thomas and Allen, 1993, 1996a, 1996b), and descriptions of habitat preferences in floras were also used. The scores assigned by the authors were compared, discussed, revised, and then averaged.

The plant list provided in Appendix 1 is arranged by major divisions, then by family, then in alphabetical order by genus and species. Nomenclature and nativity is based on the USDA PLANTS Database (accessed 2004, http://plants.usda.gov). Wetland classification (Reed 1988), wetland coefficients (Wilhelm 1992), and common names are included for each species when available.

Floristic Quality Index

Two measurements are commonly used to assess floristic quality employing the C values: (1) the average coefficient of conservatism ($\overline{C}$) and (2) the Floristic Quality Index (*FQI*). The *FQI* is a weighted index of species richness and is calculated by using the following formula:

$$FQI = \overline{C}\sqrt{n_1}$$

where $\overline{C}$ (average coefficient of conservatism) is multiplied by $\sqrt{n_1}$ (square root of the number of native species at the site). This formula is thought to correct for the differences in size, heterogeneity, or inventory effort among compared sites.

In this work we proposed an additional variant of this method called the "Adjusted Floristic Quality Index," which includes nonnatives and a quantitative value of their invasive potential, calculated using the formula:

$$AFQI = \overline{C}\sqrt{n_2}$$

where $\sqrt{n_2}$ is the total number of species at a site, including nonnatives.

Evaluating FQA

Three prairie remnants were examined by using FQA. The first was a prairie remnant of about 0.03 acres (0.012-ha) located along a railroad near Midland, Louisiana (Midland). The second, also adjacent to a railroad, was near Fenton, Louisiana and measured 0.74 acre (0.3-ha) (Fenton). A 60-acre (24-ha) remnant south of Gueydan, Louisiana on the Florence Hunting Club (Florence) was the third remnant studied. Both the Midland remnant and the Fenton remnant are examples of upland prairie while Florence represents a wet prairie. A comprehensive list of species present in the remnants was compiled during several visits from 1995 to1996 (Grace and others 2000, Allain and Grace unpublished).

Data from two experimental treatments were also studied. Ten 9.2-m^2 plots were planted with seeds of 30 prairie species in the fall of 2003. An additional six plots remained unplanted as a control. Presence/absence of species within a 1-m^2 plot was recorded in June of 2004. Average C, *FQI*, and *AFQI* were calculated for each site and treatment. The number of species assigned each coefficient was calculated for sites and treatments.

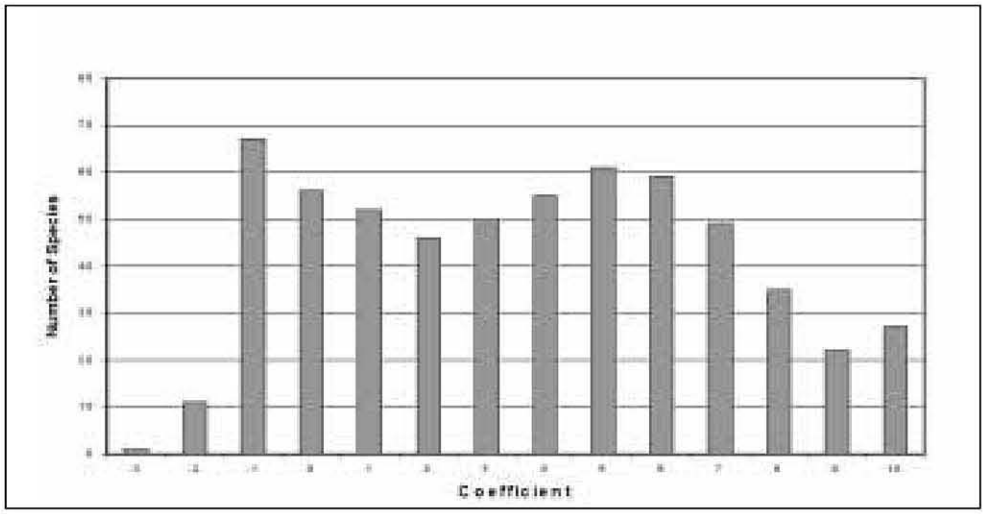

Figure 1. Number of taxa in each Coefficient of Conservatism category for all taxa occurring in Louisiana remnants and restorations. Figure 1.Number of taxa in each Coefficient of Conservatism category for all taxa occurring in Louisiana remnants and restorations.

Results and Discussion

A graph of the number of species assigned each C value (Figure 1) illustrates that the native species (C = 0–10) have a somewhat even distribution with some skew to the left, a disproportionate number of species having C values of 0 and 1. The distribution also has lesser skew to the right, 5 more species having been assigned a C = 10 than a C = 9.

Of the 594 species listed, 35% were classified as early-succession species (C = 0–1). Species adapted to disturbance represent the largest part of the flora in coastal prairie and, because of current land-use practices, are more common than conservative species. As a result of this high percentage of nonconservative species the average C value of Louisiana's coastal prairie flora (4.35) is lower than the average C for other floras (e.g., Dakotas 6.1, Illinois 5.8). This low value may be partly due to the concentration of this study on a single community type (coastal prairie), including the many disturbance species associated with it. Other studies have included all community types in the area studied. Disturbance species occur in a wide variety of plant communities whereas conservative species are restricted to few plant communities. By studying additional natural communities in south Louisiana the list of conservative species would increase more rapidly than the list of disturbance species.

Conservative species (i.e., "prairie species") with C values of 5–10 numbered 254 in this study, which exceeds the number found in other tallgrass prairies (Smeins and others 1992). Much of this diversity can be attributed to the great number of interstitial species. Genera found in true prairie are represented in coastal prairie by more species as exemplified by *Paspalum*, *Panicum*, *Agalinis*, *Asclepias*, *Eragrostis*, and a great variety of sedges (Cyperaceae). Because so little coastal prairie remains in Louisiana, it is probable that species have already been extirpated and that presettlement species richness was even higher. Certainly numerous populations with distinctive genetic composition have been lost.

High numbers of mid-succession species (30%) with a C of 4–6 may be due to the variety and complexity of seral communities found in coastal prairie. The coastal prairie is also an ecotone and shares species with many bordering community types, such as oak-hickory forest, longleaf pine savanna, flooded swamp forests, and salt and fresh marsh. It is difficult to determine whether some species were a common historical component of coastal prairie or whether they have immigrated from adjacent communities. Complicating these decisions is the degraded state of Louisiana's coastal prairie. Additionally, most remnants occur along railroad tracks which function as corridors for seed dispersal and plant migration. It is often not clear whether rare species occurring in railroad remnants are adventive or remnant individuals (e.g., *Palfoxia rosea*, western horsenettle [*Solanum dimidiatum*], wand blackroot [*Pterocaulon virgatum*]).

Woody plant species pose a challenge to evaluation as well. Although coastal prairie is considered a climax plant community, it is dependent on fire. In the absence of fire, coastal prairie will succeed to hardwood forest. Woody plants associated with disturbance and occurring in many plant communities received scores of 0–1 (e.g., black oak [*Quercus nigra*]), whereas those occurring in high-quality remnants or restricted in habitat were assigned a C value of 2–3 (e.g., *Sassafras albidum*). Higher C values of 4–6 were given to woody plants that occur in high quality remnants and not in many other plant communities in South Louisiana (e.g., American snowbell [*Styrax americanus*]).

Of the species identified from prairie remnants and restoration sites, 13% were non-natives (exotics). Most nonnative species are uncommon, and few can displace native species. These species occur under the same conditions as early succession native species and have similar life histories. These species were assigned C values of –1.

Most exotics are not as competitive as long-lived perennial native species and often disappear over time with proper management. In Louisiana restorations that are burned annually, species, such as Brazilian vervain (*Verbena brazilensis*), Johnsongrass (*Sorghum halepense*), Vasey's grass (*Paspalum urvlei*) and Bermudagrass (*Cynodon dactylon*), that are common exotic invaders of coastal prairie decrease from common to rare over time. These species were given a C of –2.

Aggressive exotics, like Chinese tallow tree (*Triadica sebifera*), can dominate a site and replace a prairie remnant with a forest monoculture in as little as 10 years. Such invasive exotics were assigned a C value of "–3." Once such invasive species become established, it is often not possible to restore prairie by removing the invader. Other exotic species threatening, but as yet not arrived in southwest Louisiana (e.g., cogongrass [*Imperata cylindrica*]), have the potential to inflict serious ecological damage to remnants and restorations alike.

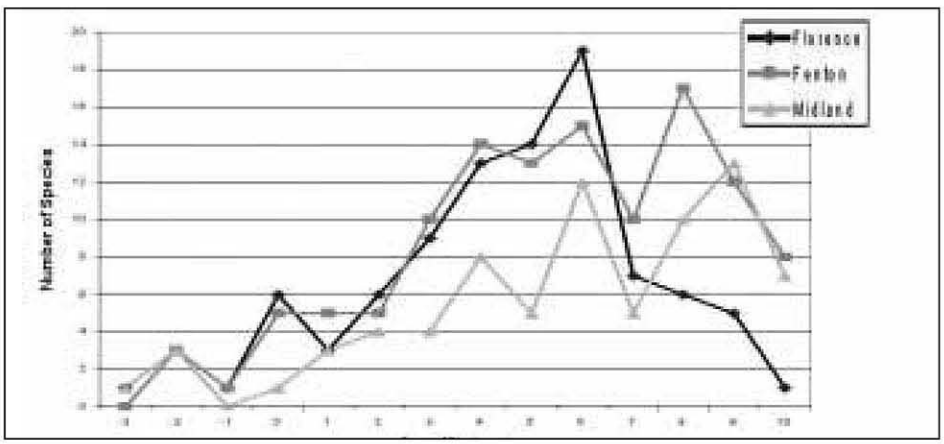

Figure 2. Number of taxa in each coefficient of conservatism category for three Louisiana prairie remnants: Florence, Fenton, and Midland.

Coefficients of conservatism can be used in a number of ways to explore floristic quality. Counting the number of species in each coefficient class for a particular site (Figures 2 and 3) creates a site profile useful in floristic analysis. Species richness varied from 117 species at Fenton to 77 species at Midland and 94 species at Florence (Figure 2). Both the Fenton and Midland remnants have more species in conservative classes (C = 5–10) than disturbance classes (C = 0–4). However, Midland had fewer disturbance species than Fenton, which contained limited areas of disturbance. Floristic quality was highest at Midland where there appeared to be little evidence of disturbance.

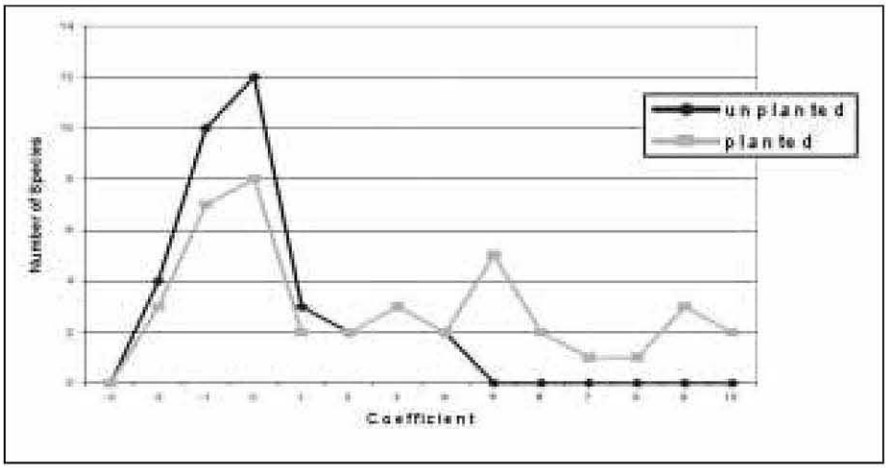

Figure 3. Number of taxa in each Coefficient of Conservatism category occurring in planted and unplanted research plots at Gueydan, Louisiana.

All three remnants had very few nonnative species. However, at Florence conservative species made up a smaller percentage of the flora and mid-succession species (C = 4–6) dominated. It seems to have suffered a higher degree of disturbance with game or cattle trails throughout and disturbance, possibly from cattle or deer, on the tops of pimple mounds. The Florence remnant is also an example of wet prairie, because the majority of species were classified as facultative, facultative wet, or obligate wetland species. The low number of very conservative species and correspondingly high number of mid-conservative species may be explained by grazing. Several species, such as eastern gamagrass (*Tripsacum dactyloides*) and cylindrical jointail grass (*Coelorachis cylindrical*) (C = 9), have disappeared from the site and are known to be decreasers under grazing. Among those species dominating the site are slender goldentop (*Euthamia tenuifolia*) and bushy goldentop (*E. leptocephala*) (C = 5), both of which increase under grazing. Another possible explanation for the large percentage of species in the mid-conservative range is the relative wetness of the site. Few conservative species are adapted to very wet conditions. Although there may seem to be a bias in the assignment of coefficients toward upland species, most wetland species occur in a variety of habitats. In southwest Louisiana many of the upland species are restricted to coastal prairie.

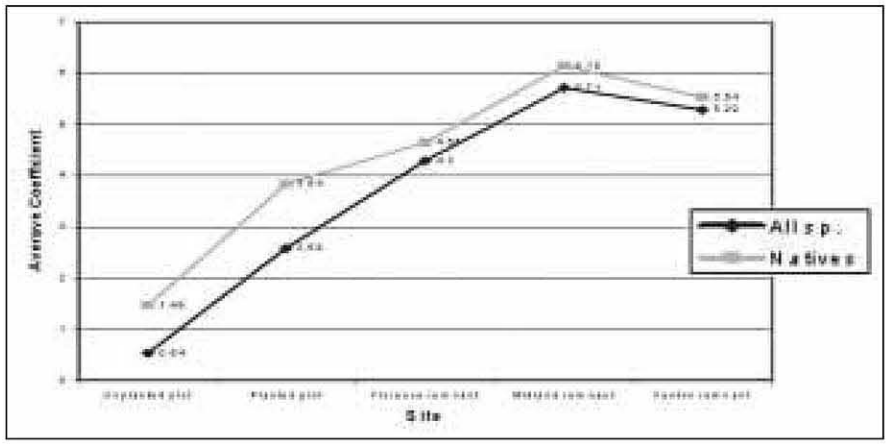

Figure 4. Average Coefficient of Conservatism calculated with and without nonnative taxa for three prairie remnants and two experimental restoration treatments.

There are fewer disturbance species (C = 1, 0 and –1) on the Midland remnant than on Fenton and Florence (Figure 2). This scarcity of disturbance species indicates that there is less local disturbance on the Midland remnant, which agrees with a visual assessment of the remnant. Despite the overall quality of the Midland remnant Chinese tallow tree, the only –3 class species, was recorded there. Its presence reinforces the impression that Chinese tallow tree is capable of invading healthy prairie (Grace 1998).

Average species richness was similar for planted and unplanted experimental plots. For all planted plots combined, 40 total species were identified; and in all unplanted plots, 36 species. A comparison of the site profiles for the planted and unplanted plots (Figure 3) reveals that there were no species with a C value above 4 in the unplanted plots while 12 species in the 5–10 class appear in the planted plots. Of the 30 prairie species planted in the experimental plots, 26 had C values of 5–10. Therefore, 11 months after planting, 14 (46%) conservative species had germinated in the planted plots. It is interesting to note that species associated with disturbance (C value from –3 to 1) were less common in planted than in unplanted plots. In the planted plots, 32% of the first year vegetation was nonnative. In the three remnants studied, all of which had experienced some disturbance, only 0.04% of the species were nonnative.

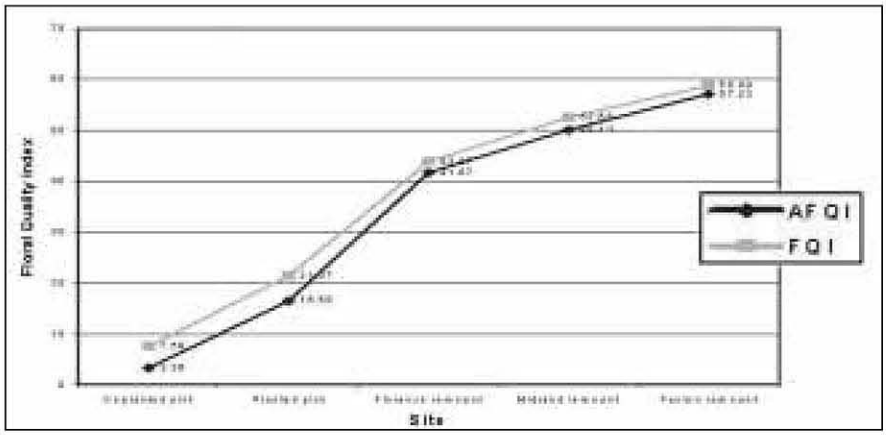

Figure 5. Floristic Quality Index and adjusted Floristic Quality Index for three prairie remnants and two experimental restoration treatments.

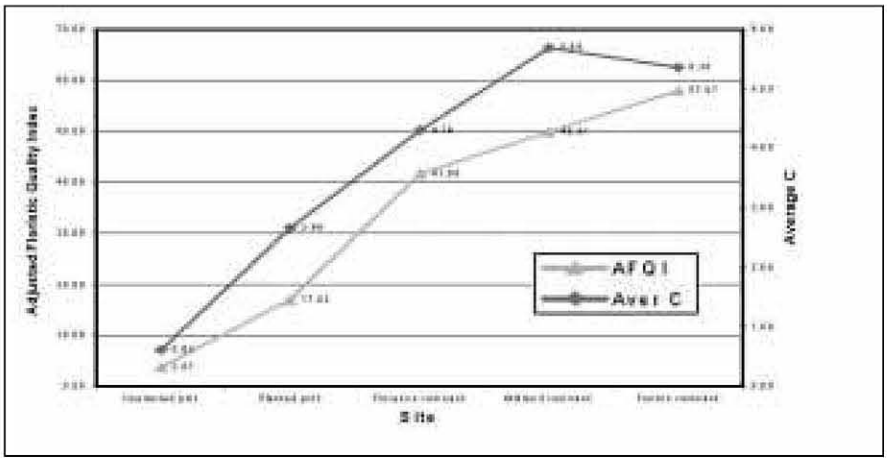

Figure 6. Adjusted Floristic Quality Index (y1 axis) and average coefficient (y2 axis) calculated with all taxa for three prairie remnants and two experimental restoration treatments.

As expected, average C values for species from for the three remnants in this study were lower when nonnatives were included (Figure 4). Average C values with and without nonnatives was more or less parallel for the three remnants. However, the relative difference between the average C values for the two experimental treatments was greater than for the three remnants. These results may be explained by a higher percentage of nonnatives in the restored sites than in prairie remnants: Fenton = 3%, Midland = 5%, Florence = 5%, planted plots = 24% and unplanted plots = 35%. Interestingly, average C value is highest for the Midland remnant which is considered to be the least disturbed remnant.

When comparing the *FQI* and the *AFQI* scores for the five sites (Figure 5), as with average C value , the overall scores are lower when nonnative species are included (*AFQI*). The difference between *FQI* and *AFQI* is greater for the two restoration treatments than for the three remnants.

An advantage of the index, over the use of average C value, is illustrated in Figure 6. Average C value for the Midland remnant is higher than for the Fenton remnant because Midland has a higher percentage of conservative species. However, Fenton has a higher *AFQI*, owing to more overall conservative species and greater size. It could be argued that if all other variables are equal (rare plants, threat of disturbance, etc.), the Fenton remnant has greater conservation value.

Conclusion

Floristic quality analysis is a versatile, relatively easy to use and repeatable system for quantifying habitat quality. It will be of value to restorationists, managers, and others involved in assessing the integrity of prairie remnants and restorations. Further, it will be useful in developing management strategies based on these criteria. The inclusion of nonnatives in an AFQI allows practitioners to better take into account the effects of exotic species. The AFQI provides an additional dimension for comparison of natural plant communities not only across similar habitats but also across time, because it can be used as a tool in monitoring restoration and enhancement projects. Although no difference was detected in the three remnants studied, we believe that a difference would be detectable in some circumstances (e.g., a remnant recovering from heavy disturbance). Weighting species by using overall abundance might correct for the apparent lack of sensitivity to nonnatives. Finally, it is essential to know the limitations of both $\overline{C}$ and *FQA*. When determining floristic quality, measures for comparative purposes should include multiple habitat parameters.

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Appendix 1.

List of plant species occurring in coastal prairie of Louisiana by major group, then by family, then alphabetically by genus and species. All scientific and common names from USDA PLANTS Database (http://plants.usda.gov).

Key C = Coefficient of Conservatism
IND = Wetland Classification
W = Wetland Coefficient
* = Species rare in Louisiana
PHYS = Physiognomy
a = annual, b = biennial, h = herbaceous, p = perennial, w = woody, forb = herbaceous dicot

SCIENTIFIC NAME	COMMON NAME	PHYS	C	IND	W
PTERIOPHYTES					
ASPLENIACEAE					
Asplenium platyneuron	Ebony spleenwort	p-fern	4	FACU	3
DENNSTAEDTIACEAE					
* *Pteridium aquilinum*	Bracken fern	p-fern	6	FACU	3
LYGODIACEAE					
Lygodium japonicum	Japanese climbing fern	p-fern	–2	FAC	0
GYMNOSPERMS					
PINACEAE					
Pinus palustris	Longleaf pine	tree	3	FACU+	2
Pinus taeda	Loblolly pine	tree	2	FAC	0
TAXODIACEAE					
Taxodium distichum	Bald cypress	tree	1	OBL	–5
MONCOTYLEDONS					
AGAVACEAE					
Manfreda virginica	American aloe agave	p-forb	10		

COMMELINACEAE					
Commelina erecta	Erect dayflower	p-forb	4		
Tradescantia hirsutiflora	Hairyflower spiderwort	p-forb	6		
Tradescantia virginiana	Virginia spiderwort	p-forb	6	FAC+	–1
CYPERACEAE					
Bulbostylis capillaris	Threadleaf beakseed	a-sedge	4	FAC	0
Carex alata	Broadwing sedge	p-sedge	4		
Carex albolutescens	Greenish-white sedge	p-sedge	4	FAC+	–1
Carex cherokeensis	Cherokee sedge	p-sedge	3	FACW-	–2
Carex complanata	Blue sedge	p-sedge	4	FAC	0
Carex frankii	Frank's sedge	p-sedge	3	OBL	–5
Carex microdonta	Little tooth sedge	p-sedge	7	FACW	–3
Carex triangularis	Caric sedge	p-sedge	8	FACW	–3
Carex vulpinoidea	Fox sedge	p-sedge	4	OBL	–5
Cladium mariscus ssp. *jamaicense*	Jamaica sawgrass	p-sedge	4	OBL	–5
Cyperus acuminatus	Tapertip flatsedge	p-sedge	5	OBL	–5
Cyperus cephalanthus	Buttonbush flatsedge	p-sedge	9		
Cyperus croceus	Baldwin's flatsedge	p-sedge	6	FAC	0
Cyperus echinatus	Globe flatsedge	p-sedge	5	FAC	0
Cyperus entrerianus	Woodrush flatsedge	p-sedge	0	FAC	0
Cyperus erythrorhizos	Redroot nutgrass	p-sedge	0	OBL	–5
Cyperus haspan	Sheathed flatsedge	p-sedge	2	OBL	–5
Cyperus iria	Ricefield flatsedge	a-sedge	–1	FACW	–3
Cyperus oxylepis	Sharp-scale flatsedge	p-sedge	–1	FACW	–3
Cyperus pseudovegetus	Marsh flatsedge	p-sedge	0	FACW	–3
Cyperus retrorsus	Pine barren flatsedge	p-sedge	2	FACU+	2
Cyperus rotundus	Purple nutsedge	p-sedge	–1	FAC-	1
Cyperus strigosus	Straw-color nutsedge	p-sedge	0	FACW	–3
Cyperus virens	Green flatsedge	p-sedge	0	FACW	–3
Eleocharis microcarpa	Small-fruit spikerush	a-sedge	4	OBL	–5
Eleocharis montana	Dombey's spikerush	p-sedge	4	OBL	–5
Eleocharis obtusa	Blunt spikesedge	p-sedge	4	OBL	–5
Eleocharis parvula	Dwarf spikerush	p-sedge	1	OBL	–5
Eleocharis quadrangulata	Square-stem spikerush	p-sedge	3	OBL	–5
Eleocharis tuberculosa	Long-tubercle spikerush	p-sedge	4	FACW+	–4
Fimbristylis autumnalis	Slender fimbry	a-sedge	3	OBL	–5
Fimbristylis miliacea	Grasslike fimbry	a-sedge	2	OBL	–5
Fimbristylis puberula	Vahl's hairy fimbry	p-sedge	4	OBL	–5
* *Fuirena pumila*	Dwarf umbrellasedge	a-sedge	6	OBL	–5
Isolepis carinata	Keeled bullrush	a-sedge	0	FACW+	–4
Kyllinga brevifolia	Shortleaf flatsedge	p-sedge	–1	FACW	–3
Kyllinga odorata	Fragrant spikesedge	p-sedge	4	FACW	–3
Psilocarya nitens	Shortbeak beaksedge	p-sedge	4	OBL	–5
Rhynchospora caduca	Anglestem beaksedge	p-sedge	6	OBL	–5
Rhynchospora cephalantha	Branched beaksedge	p-sedge	7	OBL	–5
Rhynchospora chalarocephala	Loose-head beaksedge	p-sedge	7	OBL	–5
Rhynchospora colorata	White-top-sedge	p-sedge	5	FACW	–3
Rhynchospora corniculata	Short-bristle beaksedge	p-sedge	1	OBL	–5
Rhynchospora elliottii	Elliot's beaksedge	p-sedge	7	FACW	–3
Rhynchospora globularis	Globe beaksedge	p-sedge	6	FACW	–3
Rhynchospora glomerata	Clustered beaksedge	p-sedge	6	OBL	–5
Rhynchospora harveyi	Harvey's beaksedge	p-sedge	8	FAC	0
Rhynchospora macrostachya	Tall horned beaksedge	p-sedge	0	OBL	–5
Rhynchospora microcarpa	Southern beakrush	p-sedge	7	FACW+	–4
Rhynchospora pusilla	Fairy beaksedge	p-sedge	7	FACW	–3
Rhynchospora rariflora	Few-flowered beakrush	p-sedge	7	OBL	–5
Scleria ciliata	Fringed nutrush	p-sedge	7	FAC	0
Scleria pauciflora	Carolina whipgrass	p-sedge	9	FAC+	–1
* *Scleria reticularis*	Netted nutrush	p-sedge	7	OBL	–5
* *Scleria verticillata*	Low nutrush	p-sedge	7	OBL	–5
IRIDACEAE					
* *Herbertia lahue* ssp. *caerulea*	Prairienymph	p-forb	9		

Iris brevicaulis	Zigzag iris	p-forb	5	OBL	–5
Iris virginica	Southern-blue-flag	p-forb	5	OBL	–5
Sisyrinchium angustifolium	Narrow blue-eyed-grass	p-forb	5	FAC	0
Sisyrinchium atlanticum	Eastern blue-eyed-grass	p-forb	5	FACW-	–2
Sisyrinchium langloisii	Roadside blue-eyed-grass	p-forb	5		
Sisyrinchium rosulatum	Annual blue-eyed-grass	p-forb	–1	FAC	0
JUNCACEAE					
Juncus brachycarpus	White-root rush	p-forb	3	FACW	–3
Juncus bufonius	Toad rush	a-forb	0	FACW	–3
Juncus dichotomus	Forked rush	p-forb	4	FACW	–3
Juncus effusus	Soft rush	p-forb	2	FACW+	–4
Juncus elliottii	Bog rush	p-forb	5	OBL	–5
Juncus marginatus	Grass-leaf rush	p-forb	3	FACW	–3
Juncus nodatus	Stout rush	p-forb	3	OBL	–5
Juncus polycephalus	Many-head rush	p-forb	4	OBL	–5
Juncus tenuis	Path rush	p-forb	3	FAC	0
Juncus validus	Round-head rush	p-forb	4	FACW+	–4
LILIACEAE					
* *Aletris aurea*	Golden colic-root	p-forb	8	FACW+	–4
* *Aletris farinosa*	White colic-root	p-forb	8	FAC+	–1
Allium canadense var. *canadense*	Canada garlic	p-forb	3	FACU-	4
Allium canadense var. *mobilense*	Meadow garlic	p-forb	7	FACU-	4
Cooperia drummondii	Evening rain lily	p-forb	6	FACU-	4
Hymenocallis liriosme	Fragrant spider-lily	p-forb	5	OBL	–5
Hypoxis hirsuta	Eastern yellow stargrass	p-forb	8	FAC	0
Nothoscordum bivalve	Crowpoison	p-forb	5	FAC	0
ORCHIDACEAE					
* *Calopogon oklahomensis*	Bearded grass-pink	p-forb	10		
* *Platanthera nivea*	Showy orchid	p-forb	10	FACW	–3
* *Pteroglossaspis ecristata*	Giant orchid	p-forb	10		
Spiranthes vernalis	Spring ladies'-tresses	p-forb	6	FACW-	–2
POACEAE					
Agrostis hyemalis	Winter bentgrass	p-grass	4	FAC	0
Alopecurus carolinianus	Carolina foxtail	a-grass	1	FACW	–3
Andropogon gerardii	Big bluestem	p-grass	9	FAC	0
Andropogon glomeratus	Bushy bluestem	p-grass	3	FACW+	–4
Andropogon gyrans var. *gyrans*	Elliot's beardgrass	p-grass	7		
Andropogon ternarius var. *ternarius*	Splitbeard bluestem	p-grass	6	FACU	
Andropogon virginicus var. *virginicus*	Broom-sedge bluestem	p-grass	2	FAC-	
Anthaenantia rufa	Purple silky-scale	p-grass	7	FACU	3
Aristida longispica var. *longispica*	Slimspike three-awn grass	a-grass	3	FACU	
Aristida oligantha	Prairie three-awn grass	a-grass	4		
Aristida purpurascens var. *purpurascens*	Arrowfeather three-awn grass	p-grass	8		
Axonopus fissifolius	Southern carpet grass	p-grass	0	FACW-	–2
* *Bothriochloa exaristata*	Awnless beardgrass	p-grass	3		
Bothriochloa ischaemum var. *songarica*	King Ranch bluestem	p-grass	–2		
Bothriochloa longipaniculata	Longspike silver beardgrass	p-grass	1		
Briza minor	Little quaking grass	a-grass	–1	FAC	0
Bromus catharticus	Rescuegrass	p-grass	–1		
Chloris canterai	Paraguayan windmill grass	p-grass	–1		
Coelorachis cylindrica	Cylindrical jointgrass	p-grass	9	FAC	0
Coelorachis rugosa	Wrinkled jointgrass	p-grass	7	OBL	–5
Ctenium aromaticum	Toothache grass	p-grass	8	FACW	–3
Cynodon dactylon	Bermuda grass	p-grass	–2	FACU	3
Dactyloctenium aegyptium	Crowsfootgrass	a-grass	–1		
Dichanthelium aciculare	Needleleaf rosette-grass	p-grass	6	FACU	3
Dichanthelium acuminatum var. *acuminatum*	Tapered rosette-grass	p-grass	7	FAC	0
Dichanthelium dichotomum var. *dichotomum*	Cypress panic grass	p-grass	4	FAC	0
Dichanthelium oligosanthes var. *scribnerianum*	Scribner's rosette-grass	p-grass	8	FACU	3
Dichanthelium ovale	Eggleaf rosette-grass	p-grass	7	FACU	3
Dichanthelium scoparium	Velvet-panic-grass	p-grass	4	FACW	–3
Dichanthelium sphaerocarpon var. *sphaerocarpon*	Roundseed panicum	p-grass	5		

Digitaria ciliaris	Southern crabgrass	a-grass	0	FAC	0
Digitaria cognata	Fall witch-grass	p-grass	7		
Digitaria filiformis	Slender crabgrass	p-grass	4		
Digitaria ischaemum	Smooth crabgrass	a-grass	–1	UPL	5
Digitaria violascens	Violet crabgrass	a-grass	–1	FAC	0
Echinochloa colona	Junglerice	a-grass	–1	FACW	–3
Echinochloa crus-galli	Barnyard grass	a-grass	–1	FACW-	–2
Echinochloa walteri	Coast cockspur	a-grass	0	OBL	–5
Eleusine indica	Goosegrass	a-grass	–1	FACU	3
Elymus virginicus	Virginia wildrye	p-grass	4	FAC	0
Eragrostis bahiensis	Bahia lovegrass	p-grass	–1	FAC	0
Eragrostis elliottii	Field lovegrass	p-grass	6	FACW	–3
Eragrostis hirsuta	Big-top lovegrass	p-grass	5	FACU	3
Eragrostis lugens	Mourning lovegrass	p-grass	5	FAC-	1
Eragrostis refracta	Coastal lovegrass	p-grass	5	FACW	–3
Eragrostis spectabilis	Purple lovegrass	p-grass	5	FACU	3
Glyceria declinata	Waxy mannagrass	p-grass	–1		
Gymnopogon brevifolius	Shortleaf skeletongrass	p-grass	9	FACU	3
Hordeum pusillum	Little barley	a-grass	1	FACU	3
Leersia hexandra	Southern cutgrass	p-grass	3	OBL	–5
Limnodea arkansana	Ozarkgrass	a-grass	3		
Lolium perenne	Perennial ryegrass	a-grass	–1	FACU	3
Muhlenbergia capillaris	Gulf coast muhly	p-grass	8	FACU	3
Oryza punctata	Redrice	a-grass	–1		
Panicum anceps	Beaked panic grass	p-grass	2	FAC-	1
Panicum brachyanthum	Prairie panicgrass	a-grass	5	FAC	0
Panicum dichotomiflorum var. *dichotomiflorum*	Fall panicgrass	a-grass	2	FACW	–3
Panicum hemitomon	Maiden-cane	p-grass	4	OBL	–5
Panicum rigidulum var. *rigidulum*	Red-top panic grass	p-grass	4	FACW	
Panicum virgatum	Switchgrass	p-grass	6	FAC+	–1
Paspalum dilatatum	Dallisgrass	p-grass	–1	FAC+	–1
Paspalum floridanum	Florida paspalum	p-grass	8	FACW-	–2
Paspalum laeve	Field paspalum	p-grass	5	FACW-	–2
Paspalum notatum	Bahia grass	p-grass	–2	FACU+	2
Paspalum plicatulum	Brown-seed paspalum	p-grass	6	FAC	0
* *Paspalum praecox*	Early paspalum	p-grass	9	OBL	–5
Paspalum setaceum	Thin paspalum	p-grass	5	FAC	0
Paspalum urvillei	Vasey grass	p-grass	–2	FAC	0
Setaria pumila	Yellow bristlegrass	a-grass	–1	FAC	0
Phalaris angusta	Timothy-canary grass	a-grass	0	FACW+	–4
Phalaris caroliniana	Carolina canary grass	a-grass	0	FACW	–3
Poa annua	Annual bluegrass	a-grass	–1	FAC	0
Rottboellia cochinchinensis	Itch grass	a-grass	–1		
Saccharum giganteum	Sugarcane plumegrass	p-grass	5	FACW	–3
Sacciolepis striata	American cupscale	p-grass	3	OBL	–5
Schizachyrium scoparium	Little bluestem	p-grass	7	FACU	3
Schizachyrium tenerum	Slender bluestem	p-grass	10		
Setaria parviflora	Knotroot bristlegrass	p-grass	4	FAC	0
Sorghastrum nutans	Yellow Indiangrass	p-grass	10	FACU	3
Sorghum halepense	Johnson grass	p-grass	–2	FACU	3
Spartina patens	Marshhay cordgrass	p-grass	6	FACW	–3
Spartina spartinae	Gulf cordgrass	p-grass	5	OBL	–5
Sphenopholis obtusata	Prairie wedgescale	p-grass	3	FAC+	–1
Sporobolus compositus var. *drummondii*	Meadow dropseed	p-grass	10		
Sporobolus indicus	Rattail smutgrass	p-grass	–1	FACU+	2
Sporobolus junceus	Pineywoods dropseed	p-grass	10		
* *Sporobolus silveanus*	Silven's dropseed	p-grass	10		
Steinchisma hians	Gaping panicum	p-grass	5	OBL	–5
Tridens ambiguus	Pinebarrens tridens	p-grass	10	FACW+	–4
Tridens strictus	Long-Spike Tridens	p-grass	4	FACW	–3
Tripsacum dactyloides	Eastern gama grass	p-grass	9	FAC+	–1
Urochloa platyphylla	Broad-leaf signal grass	a-grass	0	FAC+	–1

Vulpia octoflora	Common sixweeksgrass	a-grass	2	FACU+	2
PONTEDERIACEAE					
Pontederia cordata	Pickerelweed	p-forb	1	OBL	–5
SMILACACEAE					
Smilax bona-nox	Greenbriar	w-vine	3	FAC	0
Smilax rotundifolia	Common greenbriar	w-vine	3	FAC	0
TYPHACEAE					
Typha latifolia	Broad-leaf cattail	p-forb	1	OBL	–5
XYRIDACEAE					
* *Xyris difformis* var. *difformis*	Common yellow-eyed-grass	p-forb	7	OBL	–5
* *Xyris laxifolia* var. *iridifolia*	Iris-leaf yellow-eyed-grass	p-forb	7	OBL	–5
* *Xyris torta*	Twisted yellow-eyed-grass	p-forb	6	OBL	–5
DICOTYLEDONS					
ACANTHACEAE					
Hygrophila lacustris	Gulf swampweed	p-forb	2	OBL	–5
Justicia ovata	Loose-flower water-willow	p-forb	3	OBL	–5
Ruellia caroliniensis ssp. *caroliniensis*	Carolina wild-petunia	p-forb	4		
Ruellia humilis	Prairie petunia	p-forb	10	FACU	3
Ruellia pedunculata	Stalked wild-petunia	p-forb	6		
AMARANTHACEAE					
Alternanthera philoxeroides	Alligator weed	p-forb	–1	OBL	–5
Amaranthus hybridus	Hybrid pigweed	a-forb	0		
ANACARDIACEAE					
Rhus copallinum	Winged sumac	tree	3	NI	NI
Toxicodendron radicans	Poison ivy	w-vine	1	FAC	0
APIACEAE					
Centella erecta	Erect centella	p-forb	5	FACW	–3
Chaerophyllum tainturieri	Hairyfruit chervil	a-forb	1	FACU-	4
Cicuta maculata	Water hemlock	b-forb	4	OBL	–5
Cyclospermum leptophyllum	Marsh parsley	a-forb	–1	FAC+	–1
Cynosciadium digitatum	Finger dogshade	a-forb	4	FACW	–3
* *Eryngium integrifolium*	Blue-flower eryngo	p-forb	5	FACW	–3
Eryngium prostratum	Creeping eryngo	p-forb	1	FACW	–3
Eryngium yuccifolium	Button snakeroot	p-forb	9	FAC	0
Limnosciadium pumilum	Prairie dog-shade	a-forb	3	OBL	–5
Polytaenia nuttallii	Nuttall's prairie parsley	p-forb	10		
Ptilimnium capillaceum	Hair-like mock bishop-weed	a-forb	1	OBL	–5
Ptilimnium costatum	Ribbed mock bishop-weed	a-forb	4	FACW	–3
Spermolepis echinata	Bristly scaleseed	a-forb	1		
APOCYNACEAE					
Amsonia tabernaemontana	Eastern blue-star	p-forb	6	FACW	–3
AQUIFOLIACEAE					
Ilex decidua	Possumhaw	tree	2	FACW-	–2
Ilex vomitoria	Yaupon	tree	2	FAC	0
ASCLEPIADACEAE					
* *Asclepias lanceolata*	Fewflower milkweed	p-forb	6	OBL	–5
Asclepias longifolia	Long-leaf milkweed	p-forb	7	FACW+	–4
Asclepias obovata	Pineland milkweed	p-forb	7		
* *Asclepias tuberosa*	Butterfly-weed	p-forb	7		
Asclepias verticillata	Whorled milkweed	p-forb	7		
Asclepias viridiflora	Green-flowered milkweed	p-forb	8		
Asclepias viridis	Green milkweed	p-forb	4		
Cynanchum laeve	Honeyvine	p-forb	3	FAC	0
Matelea gonocarpos	Milkvine	w-vine	2	FACW	–3
ASTERACEAE					
Acmella oppositifolia var. *repens*	Creeping spotflower	p-forb	3	FACW	–3
Ambrosia artemisiifolia	Common ragweed	a-forb	0	FACU	3
Ambrosia bidentata	Lanceleaf ragweed	a-forb	3		
Ambrosia psilostachya	Western ragweed	p-forb	2	FAC	0
Ambrosia trifida	Giant ragweed	a-forb	0	FAC	0
Arnoglossum plantagineum	Indian plantain	p-forb	9	FACU	3

Baccharis halimifolia	Eastern baccharis	shrub	2	FAC	0
Bidens aristosa	Bearded beggars-ticks	a-forb	3	FACW	–3
* *Bigelowia virgata*	Rayless goldenrod	p-forb	9	FACU-	4
Boltonia asteroides	Large-flowered doll's daisy	p-forb	5	FACW	–3
Boltonia diffusa	Smallhead doll's daisy	p-forb	6	FAC	0
Chromolaena ivifolia	Ivyleaf thoroughwort	p-forb	5		
Chrysopsis mariana	Maryland golden-aster	p-forb	8	UPL	5
Cirsium horridulum	Bull thistle	b-forb	0	FAC+	–1
Conoclinium coelestinum	Blue mistflower	p-forb	4	FAC	0
Conyza canadensis	Canadian horseweed	b-forb	0	FACU	3
* *Coreopsis gladiata*	Coastalplain tickseed	p-forb	7	FACW	–3
Coreopsis lanceolata	Lance-leaf tickseed	p-forb	6	UPL	5
Coreopsis pubescens	Star tickseed	p-forb	5	FAC-	1
Coreopsis tinctoria	Plains coreopsis	a-forb	3	FAC	0
Coreopsis tripteris	Tall tickseed	p-forb	7	FAC	0
Echinacea pallida	Purple cone flower	p-forb	10		
Eclipta prostrata	Yerba de tajo	a-forb	0	FACW-	–2
Erechtites hieracifloia	Burnweed	a-forb	0	FAC-	1
Erigeron annuus	Eastern daisy fleabane	a-forb	2	FACU	3
Erigeron philadelphicus	Philadelphia daisy fleabane	p-forb	0	FAC	0
Erigeron strigosus	Prairie fleabane	b-forb	5	FAC	0
Eupatorium capillifolium	Dog-fennel	p-forb	0	FACU	3
Eupatorium hyssopifolium	Hyssopleave thoroughwort	p-forb	5		
Eupatorium leucolepis	Justiceweed	p-forb	8		
Eupatorium perfoliatum	Common boneset	p-forb	4	FACW+	–4
Eupatorium rotundifolium var. *rotundifolium*	Roundleaf thoroughwort	p-forb	7	FAC	0
Eupatorium semiserratum	Small-flower thoroughwort	p-forb	5	FACW-	–2
Eupatorium serotinum	Fall boneset	p-forb	2	FAC	0
Eurybia hemispherica	Showy aster	p-forb	7	FACU	3
Euthamia leptocephala	Bushy goldentop	p-forb	5	FACW-	–2
Euthamia tenuifolia	Slender goldentop	p-forb	5		
Gaillardia aestivalis var. *aestivalis*	Lanceleaf blanketflower	p-forb	10		
Gamochaeta purpurea	Spoonleaf purpleeverlasting	a-forb	0	UPL	5
Helenium amarum	Sneezeweed	a-forb	0	FACU-	4
* *Helenium drummondii*	Fringed sneezeweed	p-forb	7	OBL	–5
Helenium flexuosum	Purple-head sneezeweed	p-forb	6	FACW	–3
Helianthus angustifolius	Swamp narrowleaf sunflower	p-forb	5	FAC+	–1
Helianthus mollis	Ashy sunflower	p-forb	10		
Hypochaeris microcephala	Cat's ear	p-forb	–1		
Iva angustifolia	Narrowleaf marshelder	a-forb	2		
Iva annua	Annual sumpweed	a-forb	0	FAC	0
Jacquemontia tamnifolia	Hairy clustervine	h-vine	0	FACU-	4
Krigia cespitosa	Annual dwarf-dandelion	a-forb	1	FACU+	2
Krigia dandelion	Potato dwarf-dandelion	p-forb	5	FACU	3
Krigia virginica	Dwarf dandelion	a-forb	2	FACU-	4
Lactuca canadensis	Canada lettuce	b-forb	–1	FACU-	4
Lactuca floridana	Florida wild lettuce	b-forb	1	FACU	3
Liatris acidota	Slender gayfeather	p-forb	8	FACW	–3
Liatris elegans	Pinkscale blazing-star	p-forb	10		
Liatris pycnostachya	Kansas gayfeather	p-forb	9	FACU	3
Liatris spicata	Dense blazing star	p-forb	10	FACU	3
Liatris squarrosa	Scaly blazingstar	p-forb	10		
Mikania scandens	Climbing hempweed	h-vine	1	FACW+	–4
Oligoneuron nitidum	Shiny golden-rod	p-forb	7		
Packera glabella	Butterweed	a-forb	0	FACW+	–4
* *Packera tomentosa*	Woolly ragwort	p-forb	8	FAC-	1
Pityopsis graminifolia var. *graminifolia*	Narrowleaf silkgrass	p-forb	9	UPL	5
Pluchea camphorata	Camphor-weed	p-forb	3	FACW	–3
Pluchea foetida	Marsh fleabane	p-forb	6	OBL	–5
Pluchea rosea	Rosy camphor-weed	p-forb	4	FACW	–3
Pseudognaphalium obtusifolium	Rabbittobacco	b-forb	5		

* *Pterocaulon virgatum*	Wand black root	p-forb	5	FAC-	1
Pyrrhopappus carolinianus	False dandelion	b-forb	1		
Ratibida pinnata	Pinnate prairie coneflower	p-forb	10		
Rudbeckia grandiflora var. *alismifolia*	Rough coneflower	p-forb	8		
Rudbeckia hirta	Black-eyed Susan	a-forb	5	FACU	3
Rudbeckia texana	Texas brown-eyed Susan	p-forb	9	FACW-	–2
Silphium gracile	Slender rosinweed	p-forb	9		
Silphium laciniatum	Compass plant	p-forb	10		
Solidago canadensis	Canada goldenrod	p-forb	1	FACU+	2
Solidago odora	Sweet goldenrod	p-forb	10		
Solidago rugosa	Wrinkled leaf goldenrod	p-forb	10	FAC	0
Solidago sempervirens var. *mexicana*	Seaside Goldenrod	p-forb	6	FACW	
Soliva sessilis	Field burweed	a-forb	–1	FACU-	4
Sonchus asper	Prickly sow-thistle	a-forb	–1	FAC+	–1
Sonchus oleraceus	Common sow-thistle	a-forb	–1	FACU	3
Symphyotrichum dumosum	Rice button aster	p-forb	2	FAC	0
Symphyotrichum lateriflorum	Calico aster	p-forb	2		
Symphyotrichum oolentangiense	Sky blue aster	p-forb	9		
Symphyotrichum patens	Late purple aster	p-forb	8		
Symphyotrichum pratense	Barrens silky aster	p-forb	9		
Symphyotrichum subulatum	Eastern annual saltmarsh aster	a-forb	0	OBL	–5
Vernonia gigantea	Giant ironweed	p-forb	5	FAC+	–1
Vernonia texana	Texas ironweed	p-forb	6	UPL	5
Xanthium strumarium	Cocklebur	a-forb	0	FAC	0
BIGNONIACEAE					
Campsis radicans	Common trumpetcreeper	w-vine	1	FAC	0
BORAGINACEAE					
Myosotis verna	Spring forget-me-not	b-forb	1	FAC-	1
BRASSICACEAE					
Capsella bursa-pastoris	Shepard's purse	a-forb	–1	FACU+	2
Cardamine hirsuta	Hairy bitter-cress	a-forb	–1	FAC	0
Cardamine parviflora var. *arenicola*	Small-flower bitter-cress	a-forb	0	FACU	
Lepidium virginicum	Virginia pepperweed	p-forb	1	FACU	3
Rorippa sessiliflora	Stalkless yellowcress	a-forb	0	FACW+	–4
BUDDLEJACEAE					
Polypremum procumbens	Juniper-leaf	a-forb	1	FACU-	4
CALLITRICHACEAE					
Callitriche heterophylla	Larger water-starwort	p-forb	0	OBL	–5
CAMPANULACEAE					
Lobelia appendiculata	Pale lobelia	b-forb	7	FAC	0
Lobelia puberula var. *puberula*	Downy lobelia	p-forb	7	FACW-	–2
Sphenoclea zeylanica	Chicken spike	a-forb	–1	OBL	–5
Triodanis perfoliata var. *biflora*	Clasping Venus'-looking-glass	a-forb	3	FACU+	2
Triodanis perfoliata var. *perfoliata*	Venus'-looking-glass	a-forb	3		
CAPRIFOLIACEAE					
Lonicera japonica	Japanese honeysuckle	p-forb	–1	FAC-	1
Sambucus nigra ssp. *canadensis*	American elderberry	shrub	2	FACW-	–2
CARYOPHYLLACEAE					
Cerastium glomeratum	Sticky chickweed	a-forb	0	FACU-	4
Silene antirrhina	Sleepy catchfly	a-forb	2		
CISTACEAE					
Lechea mucronata	Hairy pinweed	p-forb	6		
Lechea tenuifolia	Narrowleaf pinweed	p-forb	6		
CLUSIACEAE					
Hypericum cistifolium	Round-pod St. John's wort	p-forb	7	FACW	–3
Hypericum crux-andreae	St. Peter's-wort	shrub	6	FACW-	–2
Hypericum drummondii	Nits and lice	a-forb	4	FACU	3
Hypericum galioides	Bedstraw St. John's wort	shrub	5	OBL	–5
Hypericum gentianoides	Pineweed	a-forb	5	FACU	3
Hypericum gymnanthum	Clasping-leaf St. John's-wort	p-forb	5	FACW	–3
Hypericum hypericoides ssp. *hypericoides*	St. Andrew's-cross	shrub	6	FAC	0
Hypericum nudiflorum	Early St. John's cort	shrub	7	FACW	–3

CONVOLVULACEAE					
Dichondra carolinensis	Carolina ponysfoot	p-forb	2	FACW-	–2
Evolvulus sericeus	Silky evolvulus	p-forb	8	FACW	–3
Ipomoea cordatotriloba	Tievine	h-vine	0		
Ipomoea lacunosa	White star	h-vine	0	FAC+	–1
Ipomoea sagittata	Saltmarsh morning-glory	h-vine	6	FACW	–3
* *Stylisma aquatica*	Water dawnflower	h-vine	8	FACW+	–4
CORNACEAE					
Cornus drummondii	Rough-leaf dogwood	tree	3	FAC	0
CUCURBITACEAE					
Cucumis melo	Cantaloupe	h-vine	–1		
Melothria pendula	Guadeloupe cucumber	h-vine	0	FACW-	–2
CUPRESSACEAE					
Juniperus virginiana var. *silicicola*	Southern red cedar	tree	2	FACU-	
CUSCUTACEAE					
Cuscuta indecora	Pretty dodder	h-vine	5		
DROSERACEAE					
Drosera brevifolia	Dwarf sundew	p-forb	6	OBL	–5
EBENACEAE					
Diospyros virginiana	Common persimmon	tree	4	FAC	0
ERICACEAE					
Vaccinium arboreum	Farkleberry	tree	2	FACU	3
EUPHORBIACEAE					
Acalypha gracilens	Slender threeseed mercury	a-forb	3		
Caperonia palustris	Texas weed	a-forb	0	FACW	–3
Chamaesyce humistrata	Spreading sandmat	a-forb	0	FACW	–3
Chamaesyce maculata	Spotted sandmat	a-forb	0	FACU	3
Chamaesyce nutans	Eyebane	a-forb	–1	FACU	3
Croton capitatus	Woolly croton	a-forb	3		
Croton glandulosus	Tropic croton	a-forb	1		
Croton monanthogynus	Prairie tea	a-forb	4		
Croton willdenowii	Willdenow's croton	a-forb	5		
Euphorbia corollata	Flowering spurge	p-forb	10		
Euphorbia spathulata	Warty spurge	p-forb	1	FAC	0
Phyllanthus urinaria	Chamber bitter	a-forb	–1	FAC	0
Triadica sebiferum	Chinese tallow	tree	–3	FAC	0
Tragia betonicifolia	Betonyleaf noseburn	p-forb	10		
FABACEAE					
Aeschynomene indica	Indian joint vetch	a-forb	–1	FACW+	–4
Albizia julibrissin	Mimosa	tree	–1		
Apios americana	Groundnut	p-forb	4	FACW	–3
Baptisia alba var. *macrophylla*	Largeleaf wild-indigo	p-forb	6	FAC	
Baptisia bracteata var. *laevicaulis*	Long-bract wild-indigo	p-forb	6		
Baptisia bracteata var. *leucophea*	Nodding wild-indigo	p-forb	6		
* *Baptisia nuttalliana*	Nuttall's wild indigo	p-forb	6		
Baptisia sphaerocarpa	Yellow wild indigo	p-forb	6		
Centrosema virginianum	Spurred butterfly pea	h-vine	6		
Chamaecrista fasciculata	Partridge pea	a-forb	4	FACU	3
Crotalaria sagittalis	Arrowleaf rattlebox	a-forb	7		
Dalea candida	White prairie-clover	p-forb	9		
Desmanthus illinoensis	Illinois bundleflower	p-forb	6	FAC	0
Desmodium ciliare	Hairy small leaf ticktrefoil	p-forb	6		
Desmodium paniculatum	Narrow-leaf ticktrefoil	p-forb	5	FACU	3
Desmodium sessilifolium	Sessile leaf ticktrefoil	p-forb	8		
Erythrina herbacea	Coralbean	shrub	7		
Galactia volubilis	Downy milkpea	h-vine	8	FACU	3
Glottidium vesicarium	Bag-pod	a-forb	–1	FAC+	–1
Kummerowia striata	Japanese clover	a-forb	–1	FACU	3
Lespedeza capitata	Round-head lespedeza	p-forb	8	FACU	3
Lespedeza repens	Creeping lespedeza	p-forb	5		
Lespedeza virginica	Slender lespedeza	p-forb	8		
Medicago arabica	Spotted medic clover	a-forb	–1		

Medicago lupulina	Black medic clover	p-forb	–1	FACU	3
Medicago polymorpha	Bur clover	p-forb	–1		
Melilotus indicus	Indian sweetclover	a-forb	–1	FACU-	4
Mimosa microphylla	Sensitive brier	h-vine	8		
Mimosa strigillosa	Powderpuff	shrub	1	FAC	0
Neptunia lutea	Yellow-puff	p-forb	6	FACU	3
Neptunia pubescens	Tropical puff	p-forb	8	FAC	0
Orbexilum pedunculatum var. *psoralioides*	Sampson's snakeroot	p-forb	8	FACU	3
Orbexilum simplex	Single-stem scurfpea	p-forb	8	FAC	0
* *Rhynchosia minima*	Snoutbean	h-vine	2		
Senna obtusifolia	Sicklepod	a-forb	–1		
Sesbania drummondii	Poisonbean	shrub	0	FACW	–3
Sesbania herbacea	Peatree	a-forb	0	FACW-	–2
Strophostyles umbellata	Pink fuzzybean	h-vine	6	FAC-	1
Stylosanthes biflora	Sidebeak pencil-flower	p-forb	8		
Tephrosia onobrychoides	Multibloom-hoarypea	p-forb	10		
Trifolium bejariense	Bejar clover	a-forb	2		
Trifolium dubium	Suckling clover	a-forb	–1	FACU-	4
Trifolium repens	White clover	p-forb	–2	FACU	3
Trifolium resupinatum	Persian clover	a-forb	–1	FACU	3
Vicia ludoviciana	Deer-pea vetch	h-vine	1	FACU	3
FAGACEAE					
Castanea pumila var. *pumila*	Allegheny chinkapin	tree	6		
Quercus falcata	Southern red oak	tree	2	FACU-	4
Quercus incana	Blue jack oak	tree	2		
Quercus marilandica	Black jack oak	tree	2		
Quercus nigra	Water oak	tree	1	FAC	0
Quercus stellata	Post oak	tree	2	FACU	3
Quercus virginiana	Live oak	tree	1	FACU+	2
GENTIANACEAE					
Centaurium pulchellum	Branching centaury	a-forb	–1	FAC-	1
Sabatia brachiata	Narrow-leaf rose-gentian	b-forb	5	FAC	0
Sabatia campestris	Prairie rose-gentian	a-forb	4	FACU	3
Sabatia gentianoides	Pine-woods rose-gentian	a-forb	8	OBL	–5
Sabatia stellaris	Rose of Plymouth	a-forb	4	OBL	–5
GERANIACEAE					
Geranium carolinianum	Carolina geranium	a-forb	0		
HAMAMELIDACEAE					
Liquidambar styraciflua	Sweetgum	tree	3	FAC+	–1
HYDROPHYLLACEAE					
Hydrolea ovata	Hairy hydrolea	p-forb	4	OBL	–5
JUGLANDACEAE					
Carya illinoinensis	Pecan	tree	1	FAC+	–1
LAMIACEAE					
Hedeoma hispida	Rough falsepennyroyal	a-forb	4		
Hyptis alata	Cluster bushmint	p-forb	5	OBL	–5
Lamium amplexicaule	Henbit deadnettle	b-forb	–1		
Lycopus americanus	American bugleweed	p-forb	6	OBL	–5
Monarda fistulosa	Bergamont	p-forb	8	FACU-	4
Monarda lindheimeri	Lindheimer's beebalm	p-forb	10		
Monarda punctata	Spotted bee-balm	p-forb	4	FAC	0
Physostegia digitalis	Finger false dragonhead	p-forb	7	FAC	0
Physostegia intermedia	Slender false dragonhead	p-forb	6	FACW-	–2
Physostegia virginiana ssp. *praemorsa*	Obedient plant	p-forb	6	FACW	–3
Prunella vulgaris	Heal-all	p-forb	2	FAC-	1
Pycnanthemum albescens	Whiteleaf mountain-mint	p-forb	6	FAC	0
Pycnanthemum muticum	Clustered mountain-mint	p-forb	7	FAC	0
Pycnanthemum tenuifolium	Narrowleaf mountain-mint	p-forb	7	FAC-	1
Salvia azurea var. *grandiflora*	Blue sage	p-forb	10		
Salvia lyrata	Lyreleaf sage	p-forb	2	FAC-	1
Scutellaria integrifolia	Helmet flower	p-forb	9	FAC	0
Scutellaria parvula	Small skullcap	p-forb	7	FACU-	4

Stachys crenata	Mousear	p-forb	1	FACU+	2
Stachys floridana	Florida hedgenettle	p-forb	1	FAC	0
Teucrium canadense	American germander	p-forb	4	FACW-	–2
LAURACEAE					
Sassafras albidum	Sassafras	tree	3	FACU	3
LENTIBULARIACEAE					
* *Pinguicula pumila*	Small butterwort	p-forb	7	OBL	–5
* *Utricularia subulata*	Zigzag bladderwort	p-forb	5	OBL	–5
LINACEAE					
Linum medium var. *texanum*	Stiff yellow flax	a-forb	5	FAC	
* *Linum sulcatum*	Grooved flax	a-forb	5		
LOGANIACEAE					
Mitreola petiolata	Lax hornpod	a-forb	4	FACW+	–4
Mitreola sessilifolia	Swamp hornpod	a-forb	4	FACW+	–4
LYTHRACEAE					
Ammannia coccinea	Purple ammania	a-forb	1	FACW+	–4
Cuphea carthagenensis	Columbian waxweed	p-forb	–1	FACW	–3
Cuphea glutinosa	Sticky waxweed	p-forb	–1	FACU	3
Lythrum alatum var. *lanceolatum*	Winged lythrum	p-forb	6	FACW+	
Lythrum lineare	Wand lythrum	p-forb	4	OBL	–5
MALVACEAE					
Abutilon theophrasti	Velvet leaf	a-forb	–1	FACU-	4
Callirhoe papaver	Woods poppymallow	p-forb	8		
Hibiscus moscheutos ssp. *lasiocarpos*	Crimsoneyed rose-mallow	p-forb	5		
Modiola caroliniana	Carolina bristle-mallow	p-forb	0	FACU+	2
Sida rhombifolia	Arrow-leaf sida	a-forb	0	FACU	3
MELASTOMATACEAE					
Rhexia mariana	Maryland meadow beauty	p-forb	7	FACW+	–4
MELIACEAE					
Melia azedarach	Chinaberry	tree	–1		
MULLUGINACEAE					
Mollugo verticillata	Green carpet-weed	a-forb	–1	FAC	0
MORACEAE					
Fatoua villosa	Hairy crabweed	a-forb	–2		
MYRICACEAE					
Morella cerifera	Wax-myrtle	tree	3	FAC+	–1
NYSSACEAE					
Nyssa sylvatica	Black gum	tree	1	FAC	0
OLEACEAE					
Ligustrum sinense	Chinese privet	shrub	–2	FAC	0
ONAGRACEAE					
Gaura lindheimeri	Lindheimer's beeblossom	p-forb	5		
Gaura longiflora	Longflowered beeblossom	a-forb	5		
Ludwigia decurrens	Wingleaf primrose-willow	p-forb	1	OBL	–5
Ludwigia glandulosa	Creeping seedbox	p-forb	1	OBL	–5
Ludwigia hirtella	Spindleroot	p-forb	4	FACW+	–4
Ludwigia leptocarpa	Anglestem primrosewillow	p-forb	1	OBL	–5
Ludwigia linearis	Narrow-leaf primrosewillow	p-forb	7	OBL	–5
Ludwigia palustris	Marsh seedbox	p-forb	0	OBL	–5
Ludwigia uruguayensis	Uruguayan primrosewillow	p-forb	–1	OBL	–5
Oenothera biennis	Common evening primrose	b-forb	4	FACU	3
Oenothera laciniata	Cutleaf evening-primrose	p-forb	0	FACU	3
Oenothera linifolia	Threadleaf evening-primrose	a-forb	6		
* *Oenothera pilosella* ssp. *sessilis*	Meadow evening-primrose	p-forb	8	FACU+	2
* *Oenothera spachiana*	Spach's evening primrose	a-forb	7		
Oenothera speciosa	Showey evening primrose	p-forb	2		
OROBANCHACEAE					
Orobanche uniflora	Oneflowered broomrape	a-forb	6	FACU	3
OXALIDACEAE					
Oxalis stricta	Yellow wood-sorrel	p-forb	0	UPL	5
Oxalis violacea	Violet wood-sorrel	p-forb	4		

PASSIFLORACEAE					
Passiflora incarnata	Purple passionflower	h-vine	5		
PHYTOLACCACEAE					
Phytolacca americana	Pokeweed	p-forb	1	FACU+	2
PLANTAGINACEAE					
Plantago aristata	Bracted plantain	p-forb	2		
Plantago heterophylla	Slender plantain	a-forb	1	FACW-	–2
Plantago virginica	Virginia plantain	b-forb	1	FACU-	4
POLEMONIACEAE					
Phlox pilosa ssp. *pilosa*	Downy phlox	p-forb	8	FACU+	2
POLYGALACEAE					
* *Polygala cruciata*	Drumheads	a-forb	7	OBL	–5
Polygala incarnata	Processionflower	a-forb	9	FAC-	1
Polygala leptocaulis	Swamp milkwort	a-forb	6	FACW+	–4
Polygala mariana	Maryland milkwort	a-forb	6	FACW	–3
* *Polygala nana*	Candyroot	a-forb	6	FAC+	–1
* *Polygala ramosa*	Low pinebarren milkwort	a-forb	8	OBL	–5
* *Polygala sanguinea*	Blood milkwort	a-forb	6	FAC-	1
* *Polygala verticillata*	Whorled milkwort	a-forb	5	UPL	5
POLYGONACEAE					
Polygonum hydropiperoides	Swamp smartweed	p-forb	4	OBL	–5
Rumex crispus	Curly dock	p-forb	–2	FAC	0
Rumex verticillatus	Swamp dock	p-forb	2	FACW+	–4
PORTULACACEAE					
* *Claytonia virginica*	Narrow-leaf springbeauty	p-forb	7	FACU-	4
PRIMULACEAE					
Anagallis arvensis	Scarlett pimpernel	a-forb	–1	FACU+	2
Anagallis minima	Chaffweed	a-forb	1	FACW+	–4
RANUNCULACEAE					
* *Anemone caroliniana*	Carolina anemone	p-forb	10		
Ranunculus abortivus	Littleleaf butter-cup	p-forb	1	FAC	0
Ranunculus fascicularis	Prairie butter-cup	p-forb	6	FAC-	1
Ranunculus laxicaulis	Mississippi butter-cup	a-forb	2	OBL	–5
Ranunculus muricatus	Spiny-fruit butter-cup	p-forb	–1	FACW	–3
Ranunculus pusillus	Low spearwort	a-forb	1	FACW+	–4
RHAMNACEAE					
Berchemia scandens	Alabama supplejack	w-vine	2	FACW	–3
Ceanothus americanus	New Jersey tea	shrub	7		
ROSACEAE					
Crataegus crus-galli	Cockspur hawthorn	tree	3	FAC-	1
Geum canadense	White avens	p-forb	2	FAC	0
Prunus serotina	Black cherry	tree	2	FACU	3
Rubus argutus	Sawtooth blackberry	shrub	3	FACU+	2
Rubus trivialis	Southern dewberry	w-vine	3	FAC	0
RUBIACEAE					
Cephalanthus occidentalis	Common buttonbush	shrub	3	OBL	–5
Diodia teres	Poorjoe	a-forb	2	FACU-	4
Diodia virginiana	Virginia buttonweed	a-forb	0	FACW	–3
Galium aparine	Catchweed bedstraw	a-forb	1	FACU	3
Galium tinctorium	Stiff Marsh bedstraw	p-forb	4	FACW	–3
Galium virgatum	Southwestern bedstraw	a-forb	5		
Hedyotis nigricans	Diamondflowers	p-forb	10		
Houstonia micrantha	Southern bluets	a-forb	3		
Oldenlandia boscii	Bosc's mille graines	p-forb	3	FACW-	–2
RUTACEAE					
Zanthoxylum clava-herculis	Tooth-ache tree	tree	3	FAC	0
SALICACEAE					
Salix nigra	Black willow	tree	1	OBL	–5
SAPINDACEAE					
Cardiospermum halicacabum	Balloon-vine	h-vine	1	FAC	0
SAXIFRAGACEAE					
Lepuropetalon spathulatum	Petiteplant	a-forb	2	FACW-	–2

SCROPHULARIACEAE					
Agalinis fasciculata	Beach false-foxglove	a-forb	3	FAC+	–1
Agalinis heterophylla	Prairie false-foxglove	a-forb	3	FACU+	2
Agalinis oligophylla	Ridge stem false-foxglove	a-forb	5	FAC	0
Agalinis skinneriana	Skinner's false-foxglove	a-forb	5		
Agalinis viridis	Green false-foxglove	a-forb	5		
Bacopa caroliniana	Lemon bacopa	p-forb	4	OBL	–5
Bacopa rotundifolia	Disc water-hyssop	p-forb	1	OBL	–5
Buchnera americana	American bluehearts	p-forb	9	FACW-	–2
Gratiola neglecta	Clammy hedgehyssop	a-forb	3	OBL	–5
Gratiola virginiana	Round-fruit hedgehyssop	a-forb	0	OBL	–5
Lindernia dubia var. *anagallidea*	False pimpernel	a-forb	0	FACW+	–4
Lindernia dubia var. *dubia*	Yellowseed false pimpernel	a-forb	0	FACW	–3
Mazus pumilus	Japanese mazus	a-forb	–1	FAC	0
Mecardonia acuminata	Axilflower	p-forb	5	FACW	–3
Nuttallanthus texana	Texas toadflax	a-forb	3		
* *Pedicularis canadensis*	Canadian louse-wort	p-forb	8	FACU+	2
Penstemon digitalis	Talus slope penstemon	p-forb	9	FAC	0
Penstemon laxiflorus	Nodding beardtongue	p-forb	8	FAC-	1
Veronica arvensis	Common speedwell	a-forb	–1	FAC	0
Veronica peregrina	Purslane speedwell	a-forb	0	FAC+	–1
Veronica persica	Birdeye speedwell	a-forb	–1		
Nuttallanthus canadensis	Old field toadflax	a-forb	3		
SOLANACEAE					
Physalis angulata	Cut-leaf ground-gherry	a-forb	0	FAC	0
Physalis heterophylla	Clammy ground-cherry	p-forb	1		
Solanum americanum	American black nightshade	a-forb	0	FACU+	2
Solanum carolinense	Carolina horsenettle	p-forb	1	FACU	3
* *Solanum dimidiatum*	Western horsenettle	p-forb	6		
Solanum elaeagnifolium	Silverleaf nightshade	p-forb	3		
STERCULIACEAE					
Melochia corchorifolia	Chocolate-weed	shrub	–1	FAC	0
STYRACAEAE					
Styrax americanus	American snowbell	tree	6	FACW	–3
ULMACEAE					
Celtis laevigata	Hackberry	tree	2	FACW	–3
Ulmus americana	American elm	tree	2	FACW	–3
URTICACEAE					
Boehmeria cylindrica	Small-spike false-nettle	p-forb	3	FACW+	–4
VALERIANACEAE					
Valerianella radiata	Beaked corn salad	a-forb	0	FAC-	1
VERBENACEAE					
Glandularia pulchella	South American mock vervain	p-forb	–1		
Lantana camara	Lantana	shrub	–1	FACU	3
Phyla lanceolata	Lanceleaf frog-fruit	p-forb	1	FACW+	–4
Phyla nodiflora var. *incisa*	Common frog-fruit	p-forb	1	FACW	–3
Verbena bonariensis	Purpletop vervain	p-forb	–1	FAC+	–1
Verbena brasiliensis	Brazilian vervain	a-forb	–2	FAC-	1
Verbena halei	Texas vervain	p-forb	1		
Verbena litoralis	Seashore vervain	p-forb	–1		
Verbena rigida	Tuber vervain	p-forb	–1		
VIOLACEAE					
* *Viola lanceolata*	Lance-leaf violet	p-forb	7	OBL	–5
* *Viola sagittata*	Arrow-leaf violet	p-forb	7	FACW-	–2
VITACEAE					
Ampelopsis arborea	Pepper vine	w-vine	1	FAC+	–1
Ampelopsis cordata	Heartleaf pepper vine	w-vine	1	FAC+	–1
Parthenocissus quinquefolia	Virginia creeper	w-vine	2	FAC	0
Vitis cinerea	Graybark grape	w-vine	4	FAC+	–1