A FLORISTIC SURVEY OF THE NATURE CONSERVANCY'S PRESERVE IN JOHNSTON COUNTY, OKLAHOMA

By

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CHAPTER I

INTRODUCTION

Floristic studies have long been an important means of understanding the plants, vegetation, and ecosystems that surround us. Traditionally floristic surveys have covered relatively large areas, but much can be learned from the survey of small ones as well. One such area is a preserve of The Nature Conservancy located in Johnston County in south-central Oklahoma. Situated on an outcrop of Precambrian granite, it is a 3.2 hectare site that has a number of plant communities - deciduous forest, grasslands, riparian, and granitic outcrop - each with a characteristic assemblage of species. The significance of this site is that exposed Precambrian granite is relatively infrequent in Oklahoma, composing less than 1 percent of the rock outcrop cover of the state and restricted primarily to a small portion in the south-central part (1). These Precambrian outcrop areas typically have an interesting variety of plants and plant communities (2, 3).

In late 1994, the Oklahoma Chapter of The Conservancy acquired the site via donation by the landowner. In order to determine whether it was biologically significant and worthy of protection in accordance with its goals, The Conservancy required a floristic survey of the vascular plants present; this survey was to be one part of an overall biological assessment of the property. During the 1995 and 1996 growing seasons, such a survey was conducted of both the site and the surrounding area of approximately 6.4 hectares. In addition to documenting the plants present, mapping of the site's different communities and physiographic features using Geographic Information Systems (GIS) techniques was completed. The objectives of this work were: 1) to compile a list of the vascular plant species present, 2) to document the taxa present via herbarium specimens, 3) to compile basic ecological and physiographic data, and 4) to produce a site-specific vegetation map using GIS techniques.

CHAPTER II

SITE DESCRIPTION

The Conservancy's Pennington Creek nature sanctuary and surrounding area is an approximately 9.6 hectare site located in central Johnson County, (T3S, R6E, Sec. 5, SW 1/4 SW 1/4 and Sec. 6 SE 1/4; Figures 1 and 2). Located 8.0 kilometers north and 3.2 kilometers west of Tishomingo, it is bordered by Pennington Creek and a graveled county road on the northeast side. The site is located within the Arbuckle Uplift geomorphic province and the Grand Prairie land resources area (4, 5). The topography consists of gently rolling hills and plains. Ordovician and Cretaceous limestones and Precambrian granites are the parent rock in the area. These granites and rhyolites are the oldest strata in Oklahoma, dating from 1.05 to 1.35 billion years ago and contribute to this site's uniqueness (1). They were exposed as sedimentary cover eroded from above them (4).

Soil types present are the Chigley-Granite outcrop complex (with 1 to 8 percent slope) and the Gracemont soils (6). The Chigley-Granite outcrop complex consists of a mixture of soils and outcrops of granite. The Chigley soil is a gently sloping, moderately well drained soil on uplands. Its water table is below a depth of 1 m from February to May and the rate of water intake is moderately slow.

The Gracemont soils are characterized as nearly level to gently sloping, somewhat poorly drained soils in flood plains. Their pattern of soils is intricate; about 35% of an area has a surface layer of loamy fine sand, and 50% has a surface layer of fine sandy loam. These soils are next to the stream channels; the water table is below a depth of 0.1-1.0 m for most of the year; rate of water intake is rapid.

Precipitation for the area of the site averages about 101.8 cm while the average temperature is 16.7 °C (6). Of the total annual precipitation, 59% usually falls between the months of April and September. The range of precipitation effectiveness values is from 65 to 50. The growing season for Johnston County ranges from 189 to 230 days (6). The dominant vegetation type for the area is Post Oak-Blackjack Forest (7).



Figure 1: Map of Oklahoma.

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Figure 2: Map of Pennington Creek Site.

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CHAPTER III

METHOD OF SURVEY

The major component of this research was the collection and identification of the vascular plants found at the site. During 13 trips from March 1995 to October 1996, vascular plants in fertile condition were collected while the site was systematically traversed on foot. Traditional taxonomic procedures of collecting, pressing, drying, and preservation were employed (Appendix A). Unknown species were identified using the resources of the OSU Herbarium. Some plants were identified only to genus because they were not in flower or fruit. Nomenclature was based primarily on that of Waterfall (8) and Gleason and Cronquist (9). Common names were taken from Taylor and Taylor (10). Voucher specimens were deposited in the OSU Herbarium (OKLA).

The GIS comprised spatial data layers collected in either digital or analog form from a U.S.G.S. aerial photograph, a topographic quadrangle map, and the soil survey map of Johnston County. Elevation and soils coverages were digitized from U.S.G.S. quad map and the soil survey map of Johnston County, respectively (Figure 3). Coverages of plant communities, road, and creek were derived directly from the digitized aerial photograph (Figure 4). Each spatial data layer was accompanied by a table of attribute or nonspatial data (Appendices B and C). The plant species coverage included attribute data in tabular form for a representative group of species from each plant community. Each record in the table comprised scientific name, common name, plant community, habit, collection date, collection number and relative abundance. Spatial relationships between distribution of plant species and parameters of plant communities were compared.





Figure 3: GIS Layout of Pennington Creek; Aerial Photograph with Elevation and Soils Coverages.

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Figure 4: GIS Layout of Pennington Creek; All Coverages.

CHAPTER IV

RESULTS AND DISCUSSION

Two hundred three species in 157 genera and 64 families were encountered in this survey (Appendices C-E). The four largest families were the Asteraceae, Poaceae, Fabaceae, and the Cyperaceae (Table 1). These taxa were representative of riparian habitats, post oak-blackjack woods, and prairies.

 TABLE 1: Number of Genera and Species for the Largest Families Present at The Nature Conservancy's Pennington Creek Site.

Family	Number of Genera	Number of Species
Asteraceae	24	32
Poaceae	21	28
Fabaceae	11	14
Сурегасеае	4	10

Species designated by the U.S. Fish and Witdlife Service (11) as endangered, threatened or Category 1 were not encountered. The only species present ranked by the Oklahoma Natural Heritage Inventory (12) as S1 or S2 was *Alnus maritima*. Although cited as present in the county, *Carex fissa* (S2) and *Penstemon oklahomensis* (S3) were not discovered. A species of interest because of its unusual distribution is *Alnus maritima*, seaside alder. It is found only in Johnston and Pontotoc Counties along the Blue River, its tributaries, and Pennington Creek (13). This shrub or small tree comprises large populations on the Delmarva Peninsula of southern Delaware and eastern Maryland. The seaside alder's presence in south-central Oklahoma is unexplained. Documentation of the species existence in the area dates from 1872 (14). Another riparian plant of interest is *Lobelia cardinalis*. It is an example of a taxon encountered less frequently in its natural setting due to extensive collecting by plant collectors and gardeners.

Present at the preserve are four distinct plant communities: forest, grassland, granitic outcrop and riparian. The forest community is the largest. It is composed of characteristic crosstimbers taxa. The trees are oak-hickory dominants (15) and include:

Quercus stellata, Q. marilandica, Carya texana, C. cordiformis, C. illinoensis, Ulmus alata., and U. rubra. Dominant shrubby taxa include Symphoricarpos orbiculatus and Rhus copallina. Common herbaceous species present include: Elymus canadensis, Geum canadense, Antennaria plantaginifolia, and Carex caroliniana.

Small grassland communities are present in openings of the forest community and consist of a mixture of grasses and forbs. Typical species include Tridens flavus, Gaillardia pulchella, Sorghastrum nutans, Coreopsis tinctoria, Castellija indivisa, Setaria lutescens, and Bouteloua curtipendula. The granitic outcrop community is the most unique community of the site. It occurs on the shallow, loose soils surrounding the ground-level granite domes. These shallow soils support species such as Sedum pulchellum, S. nuttallianum, Chaetopappa asteroides, and Krigia virginica. Many of these species are typical of early successional stages in granite outcrop communities (16). There are also large granite boulders throughout the site, some of which provide habitat on their surfaces or in crevices for taxa such as Polypodium polypodioides, Eragrostis capillaris, and Woodsia obtusa.

The riparian community is characterized by herbaceous species such as Chasmanthium latifolium, Justicia americana, Equisetum hyemale, Ranunculus hispidus and Lobelia cardinalis. Woody species present include Platanus occidentalis and Alnus maritima. Aquatic macrophytes were not observed in the creek.

The GIS permitted comparison of plant distribution and community parameters by creating multiple layers of spatial data and accompanying attribute data. For example, the distribution of *Sedum nuttallianum* and *S. pulchellum* correlated with the occurrence of the Precambrian granite outcrops and the distribution of *Lobelia cardinalis* with the occurrence of riparian habitat.

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APPENDIX A

Collection of Specimens

Field notes were compiled as each plant was collected and included: a description of the plant's habitat, morphology, topography, associated species; the date; collection number, and any additional comments. These notes were made with a micro-cassette recorder and later transcribed onto individual data collection sheets for each specimen. A small site map in the lower-right corner of each sheet allowed the general position of each plant collected to be recorded (Figure 5).

Specimens were placed in plant presses between layers of newsprint, absorbent blotting paper and cardboard. After the presses were loaded, they were placed in drying cabinets at approximately 43°C for 2 to 3 days. Once the specimens were completely dry, they were then placed in a freezer at 0 °C for a minimum of 1 week. The freezing process ensured that all insects and other potential pests were dead before the specimens are placed in the herbarium.

Most specimens were identified using the Key of the Vascular Plant Families of Oklahoma (17) along with U.T. Waterfall's Keys to the Flora of Oklahoma (8). On occasion, keys in the Flora of the Great Plains (18), Correll and Johnston's Flora of Texas (19), Gray's Manual of Botany (20), and Hampton's Treatment of the Amaranthaceae (21) were also used to identify plant specimens and herbarium sheets from the OSU herbarium were used to verify identifications. Nomenclature was based primarily on that of Waterfall (8) and Gleason and Cronquist (9).

After the specimens were identified, pressed and dried, they were mounted on herbarium paper. Labels on each specimen provide the scientific name, common name, topography, associated species, collection number, date collected and relative location of the plant. Each specimen was glued to acid-free herbarium paper with Elmer's wood glue, allowed to dry and then refrozen to kill insects before being accessioned to the OSU herbarium.

Collection Number: PC 261 ate: 10-8-96 cientific Name: Quercus marilandica Common Name: Blackpick Oak Family: Fagaciae Habit: arboresunt, Height: 76 Flower or Fruit: acom present opographical Situation: top of hell, drier spot, Associated Species: Rhus copalitina, Leopedera sp, Eropostis cipetalilion, Querus velutina; Abundance: Duniperus virginiana prolific throughout high pts. of site Comments (sap, scent, etc.): 10000



Figure 5: Sample of Specimen Collection Data Sheet

APPENDIX B

GIS Data

This project was created using the Arcview 3.0 program developed by the Environmental Systems Research Institute (ESRI). Multiple layers of data were created for this project. The first steps of the project included scanning, registering, and referencing a U.S.G.S. aerial photograph. This data layer was assigned real-world coordinates using U.T.M. coordinates. Four derived coverages including property boundaries, road, creek and plant communities were created on-screen from the digitized aerial photo. The road, creek, and plant community themes were created as polygon coverages and the property boundary, elevation, and soils themes are line coverages. The elevation and soils coverages were digitized directly from a U.S.G.S. quad map (Reagan series) and the Johnston County Soil Survey, respectively. The plant species coverage was added as points within the boundaries of the plant community coverages.

Most of the attribute data came from the derived coverage plant communities. The soil attribute data supplied important information for each plant community. Along with actual soil types, information regarding the depths, and their drainage properties was included. The point attribute data of the plant species coverage were added from data collected during the 1995-1996 field research seasons.

Analysis of the data represented within each coverage was done as a point-inpolygon analysis. To gain an understanding of the relationships between each species's distribution and the physical features of the site, the plant community layers and the soils layer were linked to each taxon.

APPENDIX C

GIS Attribute Tables

Ten coverages were generated in the GIS study: they were study area, species, elevation, soils, penncreek, riparian community, granite community, grassland community, forest community, and road. For each coverage two files - shape (.shp) and text (.dbf or .txt) were created. The shape files depict coveraes as either polygons, lines, or points. The text files describe the shape files by means of tabular attribute or aspatial data. For each coverage, an attribute table comprising three to seven fields and one to 100 records was created. Attribute data allows coverages to be linked or joined via matching fields. Attribute tables created are presented below.

Attribute	Table	for	Study	Area:

Shape	ID#	Boundary Line
line	1	Study Area Boundary

Attribute Table for Elevation:

Shape	ID#	Elevation Line
line	1	820 feet
line	2	830 feet
line	3	840 feet
line	4	850 feet

Attribute Table for Soils:

Shape	ID#	Soil Type	Soil Name	Depth	High Water Table Depth
line	1	6	Chigley Granite Outcrop	0-72in.	3.0 - 4.0 ft.
line	2	27	Gracemont	0-74in.	0.5 - 3.0 ft.

Attribute Table for Riparian Community	arian Community:
--	------------------

Shape	ID#	Community Type	Community Name
polygon	1	RP	Riparian
polygon	2	RP	Riparian

Attribute Table for Forest Community:

Shape	ID#	Community Type	Community Name
polygon	1	FO	Forest
polygon	2	FO	Forest

Attribute Ta	ble for Grassl	and Community:	
Shape	ID#	Community Type	Community Name
polygon	1	GR	Grassland
polygon	2	GR	Grassland
Attribute T	able for Gran	ite Community:	
Shape	ID#	Community Type	Community Name
polygon	1	GO	Granitic outcrop-boulder
polygon	2	GO	Granitic outcrop-ground level
Attribute T	able for Road	1:	
Shape	ID#	Road Type	
polygon	1	County Road	

Attribute Table for Species:

Shape	0.	Scientific Alasta	Common Nerve	Family	CONNERSY	Calectan Date	Colection #	Hadd	Abundanes
							BC 81	National Annual	-
	1	Setur Allaherum	Yelev Standorep	Crean Access	00 ·	May 28, 1995	PCH	herbenete givius	rhuert .
Port	3	Charlepaper attantiat	Lenst Deny	Adaracada	60	March 25, 1985	PCII	Nertecetus annual	-
Part	4	Perypodium perypodenties	Repursetion Fem	Potypodecess	60	May 28, 1995	PC 82	herbecelus perennal	Property
Part	5	Opuncie mechanitezz	Pricity Peer Cactus	Cactacees	60	May 27, 1996	PC 236	herbecedus perennes	respont.
Port		Kngel vrginica	Dwert Dentellon	Adarbotas	60	Arry 15, 1985	PC 34	herbeckeus	
Frent	-	Accesses white	Graat Millored	Automatican	60	Mary 26, 1995	PC 67	herteceous paravval	rituari
Port		Rudbecke hets	Glack ayed Susan	Alteracted	00	Mary 28, 1995	PC-72	harbecetus perevnet	termen
Port	10	Gallerdia pulchelle	Indian Blanast	Alteracted	60	May 28 1995	PC 73	Nerbaceous annual	DenvileA
Port	11	Desneywarn (noorne	Dwert Lanapur	Ranunquiacese	00	Mary 28, 1995	PC 74	Nertecenus	Demmen
Port	12	Lobele appandiculate	Earlower Lobelie	Сапраливская	60	Mary 28,1990	PC M	herbecenus arrusi	rdrepuert
Port	13	Art wegen	Standing Comma	Principle	60	May 27, 1904	PC 227	herbaceeus	-
Port	15	Ouerous mantendice	Biscipade Celt	Faqueene	FO	October 8 1994	PC 261	arborescent percental	common
Pount	16	Ouerous statuta	Post Out	Faquetaea	FO	April 27, 1996	PC 150	arborascers paramet	commen
Port	17	Carcia canademas	Rectout	Fabecase	FO	March 25, 1995	PC 15	arbonecert persivesi	convinan
Point	18	Potygonatum canaliculatum	Solumon's Seel	Lúscess	10	April 15 1995	PC 32	www.g.perenner	
Port	19	Carya taxana	Black Hickory	Agendacess	F0	June 8, 1996	PC 240	arborescent personal	common
Port	21	Woodse diffuse	Wood Fam	Dryogt and access	FO	May 28 1995	PCM	herbeceous personal	common
Port	22	Symphoncerpos orbiculatus	Buckprush	Capriliances	F0	August 12, 1995	PC 150	Induces personal	wary common
Port	23	Rhus capaline	Winged Sumec	Anacardiaceas	+0	Auguni 12, 1995	PC 165	Induces permitted	commen
Point	25	Zanthosylum americanum	American Pricely Aah	Rutacease	FO	July 20, 1996	PC 253	Provessed permitte	Carrymon
Port	26	Comus srummonds	Rougrand Dogwood	Cornacese	FO	Are 9 1995	PC 234	hartscena perentel	Common
Port	2/	Smean bana-not	Current Prace Rose	Rocactor	FO	June 9, 1996	PC 237	fruit cose personal	common
Port	29	Her Decidual	Deciduous Holly	Aquitougcase	FO	October 8, 1996	PC 263	N'OUTBICHT DERMYNE	-
Part	30	Jumperue wigmene	Eastern Red Ceder	Pracese	FO	April 27, 1996	PC 204	NORMACHY DRIVING	Carrimon
Port	12	Etymus wrgenicus	Canada Wed Rys	Poscess	FO	August 12, 1995	PC 140	harbaceous	
Port	a	Umus sats	Winged Elm	Autoritaria	RP	August 12, 1995	PC 165	Monsecent personal	respond
Prest	N N	Carys Minoensis	Dutchmen s Pipe	Anatokachacase	FO	April 15 1995	PC 22	www.g.perennue	1903
Port	38	Cares cardinana	Caroene Sedge	Cyperaces	FO	March 25 1995	PC 13	harbaceous personal	wary common
Port	37	Begtaus Incoophane	Plans Wed Indep	Fabecase	FO	April 15 1995	PC 40	herbeceous perennes	1949
Pown	36	A searcana piantaginétas	Puezy Town	Asteracees	10	April 15 1996	PC 47	herbaceous personal	cammon
Port	39	Telecodendron redicane	Poston hy	Anecardiacees	10	Mary 22, 1995	PC 54	herbeceous perenties	very convition
Port	40	Geum canadanae	Powerty Const	Possible	10	May 28 1995	PC 87	Nerbeceous personnel	common
Prest	47	Canattara avésa	Narrow-leaved Evening Provides	Onegracees	FO	May 26 1 995	PC 89	herbeceous perennel	antercenter.
Port	43	Desmodum gittmotum	Tick Trefoe	Fabecess	FO	July 6, 1995	PC 98	herbaceous perennel	very common
Port	44	Vibumum prunitokum	Black Hew	Capricitacian	FO	Octaber 6. 1996	PC 264	arbonescent personal	1979
Part	45	Natioscontum availie	Crow Pasan	Lascese	GR	March 25 1995	PC 4	herbecebus kinuk	Commission
Port	40	Plantago media	none vated	Partigraciae	IGR	August 12, 1995	PC 141	herbecelus perannel	Common
Pont	47	Solitions attacked	Ozań Savon	LATERCOM	GR	July 6 1995	PC 101	herbaceous perenvesi	common
Port	49	Viola rafinesioue	Field Panty	Violecese	GR	March 25, 1995	PC 21	helbeceous simusi	Insuge the
Port	50	Heienum emetum	Sneezeward	Asteraceae	GR	August 12 1995	PC 129	nertilicatus perennesi	Income.
Powe	51	Juncus marginatus	Grassianal Rush	Juncacese	GR	July 6, 1995	PC 107	herbecetus sinusi	common utracted
Port	52	Bothnochine saccharoides	Salver Bluest am	Poacee	GR	May 27 1995	PC 226	herbecedus annual	mucetre
Port	53	Agrowin scators	Tickiegrass	Falancese	GR	August 12 1995	PC 153	fulcose perenvesi	common
-	1 24	Calcours regence		1	1				
Port	56	Lespedate curiente	Sences Lespedeze	Fabecess	GR	August 12, 1995	PC 155	Multicose personal	CONTINUE
Port	1 57	Osalia comeculata	Yellow Wood Same	Oundecare	CA .	April 15 1995	PC 44	harbeceous persives	commen
Part	50	Amsonia caleta	Cade 84-14	Apocymasae	QR	April 15 1995	PC 48	herbecetus per enner	Traugestra
Port	50	Ainus martims	Seeside Alder	Bauceen	RP	August 12, 1995	PG 114	Arbersederti persintesi	
Part	60	Cheamarthum is forum	Fish on a fishing pole grase	Pascase	I AP	August 12 1995	PCIII	herbeceous parentual	DOTIVISIO
Part	87	Patrus apportant	Sicamore	Paravacter	49	August 12 1995	PC 180		rit squart
Part	63	Loonia cardenana	Carbrar Rower	Campanuagese	RP	October 15 1995	PC 181	herbecadus persivusi	-
Port	64	Amaranthus rudes	New Party	Americanthecese	AP	Jury 20 1996	PC 141	herbacana annuar	
Prart	65	Ramunculus helpidus	Bristly Buttercup	Renunctionee	RP	May 22 1995	PC SA	herbeceous persinnel	Proceeding
Part	68	Cost an opport	Stout Woodreed	Process	AP	Augure 12 1995	PC 144	herbecedus perandual	common
Port	68	Engeron pulchertus	Room & Plavitian	ANDIACODA	REP	March 26 1995	PC 20	herbeceous perennal	common
Port	69	Engeron philasechicus	Phiadelone Fleebare	Astaracees	RP	April 15, 1996	PC 18	herbecesa perevnel	common
Port	70	2416 8.416	Golden Alexanders	Арновня	RP	April 15 1995	PC 29	herbeceous personal	common
Port	71	Azanana serpytékka	Thyme-leaved Sandword	CaryophyNaceee	RP	April 15, 1995	PC 34	herbeceous pereveni	I I MALAN
Port	12	Serrous pervitionus	Prot Fundament	Adaption	RP	August 12 1995	PC 242	herbiceous annual	and and
Port	74	Euperanum ruppeum	White Snakeroca	Astericant	RP	October 15 1985	PC 184	herbeceous personal	riteouri
Port	75	Achieve metalolisum	Yatow	Asteracees	60	May 28 1995	PC 76	herbecenus perennel	common
Port	78	Cyperus strigoeus	Fane Nutgrase	Сурытесния	RP	July 6. 1995	PC 100	nerteceous personal	common
Port	77	Cares stricts	Tusack Seoge	Cyperacese	89	March 26 1995	PC 17	herbeceous parannel	Contenen
Part	78	Justice americane	American Waterweitow	Acarthaceae	1 RP	May 22_ 1990	PC 65	Nerbeceous perennel	recorde
Port	79	Rudbecka succomentate	Brown avec Summ	Advicate	RP RP	August 12 1995	PC 120	Autococus peranhal	L canvnon
Port	81	Senece sureus	Squermend	Asternoom	RP	March 18 1995	PC 190	herbecena persinal	relievent
Port	82	Tridens Annue	Pursentop	Poscase	GR	Cictober 15 1995	PC 191	herbecedus persivuel	cammon
Point	83	Calintos michants	Cowboy Rose	Mahracosa	10	May 22 1995	PC 50	herbecoous persimal	
Port	- 54	Rhammus carolinans	Inden Cherry	Rhamnaceet	10	July 20 1994	PC 231	Promocert perennel	-ara
Post	00	Veters utchas	White Veryan	Arteraceas	189	July 20 1994	PC 256	herbecepus persnasi	Principality
Port	67	Evonorbe macuata	Prostrate Spurge	Euphortescene	RP	Jury 20, 1968	PC 256	herbecesus arrus	-
Port	60	Cicula meculita	Water Hermoch	Apacasa	RP	July 20 1994	PC 257	harbsceaus persinnel	Parcents.
Port	62	Vamona badwina	Itomesed	Allaraceae	10	ANY 20 1996	PC 258	herbecome personal	recent
Port	90	Commana communa	Sent Dependent	Descent	10	Consers 1994	PC 250	herbeconus sincus	Paceto
Port	1 97	Quercus must show the	Christoph Oat	Fagaran	10	July 20 1995	PC 250	abornert perma	commen
Port	63	Soldage delocate	Snowy wand Goldenvod		10	ANY 20 1964	PC 24	herbecesus perannal	common
Port	94	Marus rubra	Red Mulberry	Montone	FO	Are 9 1996	PC 243	arburnscert persivusi	commen
Port	95	Phryme wploatechys	Lopised	Verbenacies	10	3091 9 mm.	PC 238	herbecesse personal	Ins.orth
Port	90	Lannoscadium prinatum	none heled	Abusceen	RP CO	Are 9 1996	PC 236	herbeceous annual	
Port	97	Autors har he	Heartwood Some	Porgenerate	GR	Mary 27 1966	PC 234	herbecasus annual	Ostromen
Port	00	Laduca canadanse	Wild Lature	Allericas	10	Mary 27 1996	PC 731	herbecesus perennel	response
Port	100	Sphenophone oblueata	Prane Wedgegrass	Pascasa	FO	Mary 27 1996	PC 226	herbecome pararyad	risouth .
Part	101	Per-podum per-podrom	Resurrection fam	Psypodiaceae	GO	Mary 28 1995	PC 12	harbacebus personal	1.00

APPENDIX D

Alphabetical List of Families

Acanthaceae Juss.	Acanthus Family
Amaranthaceae Juss.	Pigweed Family
Anacardiaceae Lind1.	Cashew Family
Apiaceae Lind1.	Parsley Family
Apocynaceae Juss.	Dogbane Family
Aquifoliaceae Bart1.	Holly Family
Aristolochiaceae Juss.	Birthwort Family
Asclepiadaceae R. Br.	Milkweed Family
Aspleniaceae Mett. ex A. B. Frank	Spleenwort Family
Asteraceae Dum.	Sunflower Family
Betulaceae S.F. Gray	Birch Family
Brassicaceae Burnett	Mustard Family
Cactaceae Juss.	Cactus Family
Campanulaceae Juss.	Bellflower Family
Caprifoliaceae Juss.	Honeysuckle Family
Caryophyllaceae Juss.	Pink Family
Clusiaceae Lindl.	St. John's-wort Family
Commelinaceae R. Br.	Spiderwort Family
Cornaceae Dum.	Dogwood Family
Crassulaceae DC.	Stonecrop Family
Cucurbitaceae Juss.	Cucumber Family
Cupressaceae Rich. ex Bartl.	Cypress Family
Cyperaceae Juss.	Sedge Family
Dryopteridaceae Ching	Wood Fern Family
Equisetaceae Rich.	Horsetail Family

Euphorbiaceae Juss. Fabaceae Lind1. Fagaceae Dum. Fumariaceae DC. Gentianaceae Juss. Hydrophyllaceae R. Br. Iridaceae Juss. Juglandaceae A. Rich. ex Kunth. Juncaceae Juss. Lamiaceae Lind1. Liliaceae Juss. Lythraceae J. St.-Hil. Malvaceae Juss. Menispermaceae Juss. Moraceae Link Nyctaginaceae Juss. Oleaceae Hoffmsg. & Link Onagraceae Juss. Oxalidaceae R. Br. Plantaginaceae Juss. Platanaceae Dum. Poaceae Barnh. Polemoniaceae Juss. Polygonaceae Juss. Polypodiaceae S.F. Gray Primulaceae Vent. Ranunculaceae Juss.

Spurge Family Bean Family Oak Family Fumitory Family Gentian Family Waterleaf Family Iris Family Walnut Family Rush Family Mint Family Lily Family Loosestrife Family Mallow Family Moonseed Family Mulberry Family Four O'clock Family Olive Family Evening Primrose Family Wood Sorrel Family Plantain Family Sycamore Family Grass Family Polemonium Family Buckwheat Family True Fern Family Primrose Family Buttercup Family

Rhamnaceae Juss.
Rosaceae Juss.
Rubiaceae Juss.
Rutaceae Juss.
Sapotaceae Juss.
Scrophulariaceae Juss.
Smilacaceae Vent.
Ulmaceae Mirb.
Valerianaceae Batsch
Verbenaceae StHil.
Violaceae Batsch
Vitaceae Juss.

Buckthorn Family Rose Family Madder Family Citrus Family Sapodilla Family Figwort Family Greenbrier Family Ualerian Family Valerian Family Violet Family Grape Family

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APPENDIX E

List of Species by Family

Acanthaceae Juss.	Acanthus Family
Justicia americana (L.) Vahl	
Ruellia strepens L.	
Amaranthaceae Juss.	Pigweed Family
Amaranthus rudis Sauer	
Anacardiaceae Lind1.	Cashew Family
Rhus copallina L.	
Toxicodendron radicans L.	
Apiaceae Lind1.	Parsley Family
Chaerophyllum procumbens L.	*
C. tainturieri Hook.	
Cicuta maculata L.	
Limnosciadium pinnatum (DC.) Math. & Const.	
Ptilimnium nuttallii (DC.) Britt.	
Sanicula canadensis L.	
Zizia aurea (L.) Koch	
A Trees	Dochane Family

Apocynaceae Juss.

Dogbane Family

Aquifoliaceae Bart1.	Holly Family
Ilex decidua Walt.	
Aristolochiaceae Juss.	Birthwort Family
Aristolochia tomentosa Sims	
Asclepiadaceae R. Br.	Milkweed Family
Asclepias asperula (Dcne.) Woods.	
A. viridis Walt.	
Matelea sp.	
Aspleniaceae Mett. ex A.B. Frank	Spleenwort Family
Asplenium platyneuron (L.) D.C. Eat.	
Asteraceae Dum.	Sunflower Family
Achillea millefolium L.	
Actinomeris alternifolia (L.) DC.	
Antennaria plantaginifolia (L.) Richard	
Aster azureus Lind1.	
A. sagittifolius Willd.	
Bidens polylepis Blake	
Chaetopappa asteroides DC.	
Chrysopsis pilosa Nutt.	
Coreopsis tinctoria forma tinctoria Nutt.	
Elephantopus carolinianus Raeusch.	
Erigeron philadelphicus L.	

Eupatorium incarnatum Walt.

E. rugosum Houtt.

E. serotinum Michx.

Gaillardia pulchella Foug.

Gnathalium purpureum L.

Helenium amarum var. amarum (Raf.) Rock

Helianthus lactiflorus Pers.

Hymenopappus tenuifolius Pursh.

Krigia oppositifolia Raf.

K. virginica (L.) Willd.

Lactuca canadensis L.

Pyrrhopappus carolinianus (Walt.) DC.

P. scaposus DC.

Rudbeckia hirta L.

R. subtomentosa Pursh.

R. triloba L.

Senecio aureus L.

Solidago delicatula Small

Verbesina virginica L.

Vernonia baldwinii Torr.

Betulaceae S. F. Gray

Birch Family

Mustard Family

Alnus maritima Muhl. ex Nutt.

Brassicaceae Burnett

Cardamine parviflora var. arenicola (Britt). O. E. Schulz

C. pensylvanica Muhl.

Lepidium virginicum L.

Cactaceae Juss.	Cactus Family
Opuntia macrorhiza Engelm.	
Campanulaceae Juss.	Bellflower Family
Lobelia appendiculata DC.	
L. cardinalis L.	
Specularia leptocarpa (Nuttall) Gray	
S. perfoliata (L.) A. DC.	
Caprifoliaceae Juss.	Honeysuckle Family
Symphoricarpos orbiculatus Moench.	
Viburnum prunifolium L.	
Caryophyllaceae Juss.	Pink Family
Arenaria serpyllifolia L.	
Stellaria media L.	
Clusiaceae Lind1.	St. John's-wort Family
Hypericum drummondii (Grev. & Hook.) T. & G.	
H. punctatum Lam.	
Commelinaceae R. Br.	Spiderwort Family

Commelina communis L.

Cornaceae Dum.	Dogwood Family
Cornus drummondii Meyer	
Crassulaceae DC.	Stonecrop Family
Sedum nuttallianum Raf.	
S. pulchellum Michx.	
Cucurbitaceae Juss.	Cucumber Family
Melothria pendula L.	
Cupressaceae Rich. ex Bart1.	Cypress Family
Juniperus virginiana L.	
Cyperaceae Juss.	Sedge Family
Cyperaceae Juss. Carex blanda Dewey	Sedge Family
Cyperaceae Juss. Carex blanda Dewey C. caroliniana Schwein	Sedge Family
Cyperaceae Juss. Carex blanda Dewey C. caroliniana Schwein C. microdonta Torr. & Hook.	Sedge Family
Cyperaceae Juss. Carex blanda Dewey C. caroliniana Schwein C. microdonta Torr. & Hook. C. planostachys Mack.	Sedge Family
Cyperaceae Juss. Carex blanda Dewey C. caroliniana Schwein C. microdonta Torr. & Hook. C. planostachys Mack. C. shortiana Dew.	Sedge Family
Cyperaceae Juss. Carex blanda Dewey C. caroliniana Schwein C. microdonta Torr. & Hook. C. planostachys Mack. C. shortiana Dew. C. stricta Lam.	Sedge Family
Cyperaceae Juss. Carex blanda Dewey C. caroliniana Schwein C. microdonta Torr. & Hook. C. planostachys Mack. C. shortiana Dew. C. stricta Lam. Cyperus ovularis (Michx.) Torr.	Sedge Family
Cyperaceae Juss.Carex blanda DeweyC. caroliniana SchweinC. microdonta Torr. & Hook.C. microdonta Torr. & Hook.C. planostachys Mack.C. shortiana Dew.C. stricta Lam.Cyperus ovularis (Michx.) Torr.C. strigosus L.	Sedge Family
Cyperaceae Juss.Carex blanda DeweyC. caroliniana SchweinC. microdonta Torr. & Hook.C. microdonta Torr. & Hook.C. planostachys Mack.C. shortiana Dew.C. stricta Lam.Cyperus ovularis (Michx.) Torr.C. strigosus L.Eleocharis sp.	Sedge Family
CyperaceaeJuss.Carex blanda DeweyC. caroliniana SchweinC. microdonta Torr. & Hook.C. microdonta Torr. & Hook.C. planostachys Mack.C. shortiana Dew.C. stricta Lam.Cyperus ovularis (Michx.) Torr.C. strigosus L.Eleocharis sp.Scirpus sp.	Sedge Family
Cyperaceae Juss. Carex blanda Dewey C. caroliniana Schwein C. microdonta Torr. & Hook. C. planostachys Mack. C. shortiana Dew. C. stricta Lam. Cyperus ovularis (Michx.) Torr. C. strigosus L. Eleocharis sp. Scirpus sp.	Sedge Family

Woodsia obtusa (Spreng.) Torr.

Equisitaceae Rich.	Horsetail Family
Equisetum hyemale L.	
Euphorbiaceae Juss.	Spurge Family
Croton 1indheimerianus Scheele.	
Euphorbia dentata Michx.	
E. maculata L.	
E. nutans Lag.	
Tragia ramosa Torr.	
Fabaceae Lind1.	Bean Family
Amorpha fruticosa L.	
Baptisia leucophaea Nutt.	
Cassia fasiculata Michx.	
Cercis canadensis L.	
Desmodium canescens (L.) DC.	1 a
D. glutinosum (Muhl. ex Willd.) Wood	
D. nudiflorum (L.) DC.	
Lespedeza cuneata (Dumont) G. Don	
L. virginica (L.) Britt.	
Neptunea lutea (Leavenw.) Benth.	
Psoralea tenuiflora Pursh	
Strophostyles helvola (L.) Ell.	
Trifotium dubium Sibth.	
Vicia villosa Roth.	

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Fagaceae Dum.	Oak Family
Quercus macrocarpa Michx.	
Q. marilandica Muench.	
Q. muchlenbergii Engelm.	
Q. shumardii Buck1.	
Q. stellata Wang.	
Fumariaceae DC.	Fumitory Family
Corydalis micrantha (Engelm.) Gray	
Gentianaceae Juss.	Gentian Family
Sabatia campestris Nutt.	
Hydrophyllaceae R. Br. Phacelia strictiflora (Engelm. & Grav) Grav	Waterleaf Family
8	•
Iridaceae Juss.	Iris Family
Sisyrinchium angustifolium P. Mill.	
Juglandaceae A. Rich. ex Kunth.	Walnut Family
Carya cordiformis (Wang.) K. Koch	
C. illinoensis (Wang.) K. Koch	
C. texana Buckl.	
Juglans nigra L.	
Juncaceae Juss.	Rush Family

Juncus marginatus Rostk.

Lamiaceae Lind1.	Mint Family
Hedeoma hispida Pursh.	
Monarda fistulosa L.	
Prunella vulgaris L.	
Satureja arkansana (Nutt.) Briq.	
Scutellaria parvula Michx.	
Lilaceae Juss.	Lily Family
Allium canadense L.	
Hypoxis hirsuta (L.) Coville	
Nothoscordum bivalve (L.) Britton	
Polygonatum canaliculatum (Muhl.) Pursh.	
Lythraceae J. StHi1.	Loosestrife Family
Lythrum alatum Pursh	
Malvaceae Juss.	Mallow Family
Callirhoe involucrata (T. & G.) A.	
X · · · · · · · · · · · · · · · · · · ·	Managed Family
Menispermaceae Juss.	Moonseed Family
Cocculus carolinus (L) DC.	
Moraceae Link	Mulberry Family
Maclura pomifera (Raf.) Schneid.	(A. 20)
Morus rubra L.	

	2)
Nyctaginaceae Juss. Mirabilis linearis (Pursh.) Heimerl.	Four O'clock Family
Oleaceae Hoffmsg. & Link Fraxinus americana L.	Olive Family
Onagraceae Juss. Gaura biennis L. var. pitcheri Pickering Ludwigia alternifolia L.	Evening Primrose Family
Oxalidaceae R. Br. Oxalis corniculata L.	Wood Sorrel Family
Plantaginaceae Juss. Plantago purshii R. & S. P. virginica L. P. wrightiana Dene.	Plantain Family
Platanaceae Dum. Platanus occidentalis L.	Sycamore Family
Poaceae Barnh. Agrostis scabra Willd. Aira elegans Willd. ex Gaudin Bothriochloa saccharoides (Sw.) Rydb. Bouteloua curtipendula (Michx.) Torr.	Grass Family
Doutcioua cui upendula (micha.) Torr.	

Bromus japonicus Thunb. ex Murr.

B. pubescens Muhl. ex Willd.

B. purgans L.

Chasmanthium latifolium (Michx.) Yates

Cinna arundinacea L.

Echinochloa crus-galli (L.) Beauv.

Elymus virginicus L.

Eragrostis capillaris (L.) Nees

E. spectabilis (Pursh.) Steud.

Festuca arundinacea Schreb.

Lolium multiflorum Lam.

Muhlenbergia sobolifera (Muhl.) Trin.

Panicum acuminatum Swartz.

P. anceps Michx.

P. clandestinus L.

P. depauperatum Muhl.

P. laxiflorum Lam.

Paspalum dilatatum Poir.

Setaria lutescens (Weigel) Hubb.

Sorghastrum nutans (L.) Nash

Sorghum halepense (L.) Pers.

Sphenopholis obtusata (Michx.) Scribn.

Sporobolus clandestinus (Biehler) Hitchc.

Tridens flavus (L.) Hitchc.

Polemoniaceae Juss.

Polemonium Family

Gilia rubra (L.) Wherry

Polygonaceae Juss.	Buckwheat Family
Polygonum punctatum Ell.	
Rumex hastulus Baldw.	
Polypodiaceae S.F. Gray	True Fern Family
Polypodium polypodioides (L.) Watt	
Primulaceae Vent.	Primrose Family
Samolus parviflorus Raf.	
Ranunculaceae Juss.	Buttercup Family
Delphinium tricorne Michx.	
Ranunculus sp.	
Ranunculus fascicularis Muhl.	
R. hispidus Michx.	
Rhamnaceae Juss.	Buckthorn Family
Berchemia scandens (Hill) K. Koch	
Rhamnus caroliniana Walt.	
Rosaceae Juss.	Rose Family
Geum canadense Jacq. var. camporum (Rydb.) Fern.	
Prunus mexicana S. Wats.	
Rosa setigera var. setigera Michx.	
Rubus sp.	

Rubiaceae Juss.	Madder Family
Cephalanthus occidentalis L.	
Diodia teres Walt.	
Galium aparine L.	
G. pilosum Ait.	
Hedyotis crassifolia Raf.	
Rutaceae Juss.	Citrus Family
Zanthoxylum americanum Mill.	
Sapotaceae Juss.	Sapodilla Family
Bumelia lanuginosa (Michx.) Pers.	
Scrophulariaceae Juss.	Figwort Family
Castilleja indivisa Engelm.	
Collinsia violacea Nutt.	
Linaria canadensis (L.) Dumont	
Smilacaceae Vent.	Greenbrier Family
Smilax bona-nox L.	
Ulmaceae Mirb.	E1m Family
Ulmus alata Michx.	
U. rubra Muhl.	
Valerianaceae Batsch	Valerian Family
Valerianella radiata (L.) Dufr.	

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Phryma leptostachya L.

Verbena urticifolia L.

Violaceae Batsch

Viola langloisii Greene

V. rafinesquii Greene

V. sororia Willd.

Vitaceae Juss.

Vitis acerifolia Raf.

Violet Family

Grape Family

na miner kanda kukuta valak dalah dalah sabat sabat dalah bilan tahun tahun tahun dalah sabat tahu

APPENDIX F

Alphabetical List of Species

Scientific Name	Common Name
Achillea millefolium	Yarrow
Actinomeris alternifolia	Yellow Ironweed
Agrostis scabra	Ticklegrass
Aira elegans	Elegant Hairgrass
(=Aira elegantissima)	
Allium canadense var. canadense	Wild Onion
Alnus maritima	Seaside Alder
Amaranthus rudis	Water Hemp
Amorpha fruticosa	False Indigo
Amsonia ciliata	Ciliate Blue-star
Andropogon saccharoides	Silver Bluestem
Antennaria plantaginifolia	Pussy Toes
Arenaria serpyllifolia	Thyme-leaved Sandwort
Aristolochia tomentosa	Dutchmen's Pipe
Asclepias asperula	Spider Antelopehorn
A. viridis	Green Milkweed
Asplenium platyneuron	Ebony Spleenwort
Aster azureus	Sky-blue Aster
A. sagittifolius	Arrowleaf Aster
Baptisia leucophaea	Plain's Wild Indigo
Berchemia scandens	Rattan Vine
Bidens polylepis	Coreopsis Beggarticks
Bothriochloa saccharoides	Silver Bluestem
(=Andropogon saccharoides)	
Bouteloua curtipendula	Side Oats Grama
Bromus japonicus	Japanese Brome
B. pubescens	Canada Brome
B. purgans	Canada Brome
Bumelia lanuginosa	Chittamwood
Callirhoe involucrata forma novomexicana	Cowboy Rose
Cardamine parviflora var. arenicola	Smallflower Bitter Cress
C. pensylvanica	Bitter Cress
Carex blanda	Eastern Woodland Sedge
C. caroliniana	Carolina Sedge
C. microdonta	Sawtoothed Sedge
C. planostachys	Cedar Sedge
C. shortiana	Short's Sedge
C. stricta	Tussock Sedge
(=C. emoryi)	
Carya cordiformis	Bitternut Hickory
C. illinoensis	Pecan

C. texana Cassia fasiculata Castilleja indivisa Cephalanthus occidentalis Cercis canadensis Chaerophyllum procumbens C. tainturieri Chaetopappa asteroides Chasmanthium latifolium (=Uniola latifolia) Chrysopsis pilosa Cicuta maculata Cinna arundinacea Cocculus carolinus Collinsia violaceae Commelina communis Coreopsis tinctoria forma tinctoria Cornus drummondii Corydalis micrantha Croton lindheimerianus Cyperus ovularis var. sphaericus C. strigosus Danthonia spicata Delphinium tricorne forma alibflora Desmodium canescens D. glutinosum D. nudiflorum Diodia teres Echinochloa crus-galli Eleocharis sp. Elephantopus carolinianus Elymus virginicus Equisetum hyemale Eragrostis capillaris E. spectabilis Erigeron philadelphicus E. pulchellus Eupatorium incarnatum E. rugosum E. serotinum Euphorbia dentata E. maculata E. nutans Festuca arundinacea Fraxinus americana Gaillardia pulchella

Black Hickory Partridge Pea Indian Paintbrush Buttonbush Redbud Wild Chervil Hairy Fruit Wild Chervil Least Daisy Fish-on-a-Fishin-Pole Grass Soft Hair Golden Aster Water Hemlock Stout Woodreed Carolina Snailseed Violet Collinsia Day-flower Plain's Coreopsis Roughleaf Dogwood Slender Fumewort Three-seeded Croton Globe Flatsedge False Nutgrass **Poverty Ryegrass** Dwarf Larkspur Large-flowered Tick Clover Tick Trefoil **Rough Buttonweed** Barnyard Grass Spikerush

Leafy Elephantfoot Virginia Wild Rye Horsetail Lacegrass Purple Lovegrass Philadelphia Fleabane **Robin's Plantain** Pink Eupatorium White Snakeroot Late Boneset Toothed Spurge Prostrate Spurge Eyebane Reed Fescue White Ash Indian Blanket

VICT IN LINE POINTED

Deciduous Holly Standing Cypress Black Walnut Grassleaf Rush Eastern Red Cedar American Waterwillow Weedy Dwarf Dandelion Dwarf Dandetion Wild Lettuce Virginia Peppergrass Sericea Lespedeza Stender Lespedeza -----Blue Toadflax Earflower Lobelia Cardinal Flower Ryegrass **Bushy Seedbox** Winged Loosestrife Osage Orange Climbing Milkweed **Drooping Melonette** Narrowleaf 4 O'clock Wild Bergamot Red Mulberry Rocky Muhly Yellow Neptunia Crow Poison Narrow-leaved Evening Primrose

Catchweed Bedstraw

Long Flowered Gaura

Hairy Bedstraw

Standing Cypress

Rough Pennroyal

White Avens

Tiny Bluet

Sneezeweed

Tiny Bluet

Old Plain's Man

Yellow Stargrass

Spotted St. John Wort

Nits-and-Lice

212220

Galium aparine G. pilosum Gaura biennis Geum canadense var. camporum Gilia rubra Hedeoma hispida Hedyotis crassifolia (= Houstonia minima) Helenium amarum Helianthus laetiflorus Houstonia minima Hymenopappus tenuifolius Hypericum drummondii H. punctatum Hypoxis hirsuta llex decidua Ipomopsis rubra (= Gilia rubra) Juglans nigra Juncus marginatus Juniperus virginiana Justicia americana Krigia oppositifolia K. virginica Lactuca canadensis Lepidium virginicum Lespedeza cuneata L. virginica Limnosciadium pinnatum Linaria canadensis Lobelia appendiculata L. cardinatis Lolium multiflorum Ludwigia alternifolia var alternifolia Lythrum alatum Maclura pomifera Matalea sp. Melothria pendula Mirabilis linearis Monarda fistulosa Morus rubra Muhlenbergia sobolifera Neptunia lutea Nothoscordum bivalve Oenothera linifolia

Opuntia macrorhiza Oxalis corniculata Panicum acuminatum P. anceps P. clandestinum P. depauperatum P. laxiflorum Paspalum dilatatum Phacelia strictiflora Phryma leptostachya Plantago purshii P. virginica P. wrightiana Platanus occidentalis Polygonatum canaliculatum Polygonum punctatum Polypodium polypodioides Prunella vulgaris Prunus mexicana Psoralea tenuiflora Ptilimnium nuttallii Pyrrhopappus carolinianus P. scaposus Quercus macrocarpa Q. marilandica Q. muehlenbergii Q. shumardii **O.** stellata Ranunculus sp. Ranunculus fascicularis R. hispidus Rhamnus caroliniana Rhus copallina Rhus radicans Rosa setigera var. setigera Rubus sp. Rudbeckia hirta R. subtomentosa R. triloba Ruellia strepens forma strepens Rumex hastulus Sabatia campestris forma campestris Samolus parviflorus Sanicula canadensis Satureja arkansana

Prickly Pear Cactus Creeping Wood Sorrel Wooly Panicum Beaked Panicum Panicum Slimleaf Panicum **Open-flower** Panicum Dallis Grass Prairie Blue Curls Lopseed Pursh Plantain Pale-seeded Plantain Wright's Plantain Sycamore Solomon's Seal Water Smartweed **Resurrection Fern** Cure All Mexican Plum Scurfy Pea Nutall's Mock Bishopweed False Dandelion False Dandelion Bur Oak Blackjack Oak Chinkapin Oak Shumard's Oak Post Oak Buttercup Early Buttercup Hispid Buttercup Indian Cherry Winged Sumac Poison Ivy **Climbing Prairie Rose** Raspberry Black-eyed Susan Sweet Coneflower Brown-eyed Susan Wild Petunia Heartwing Sorrel Prairie Rose Water Pimpernel Canada Sanicula **Ozark Savory**

Scirpus sp. Scutellaria parvula Sedum nuttallianum S. pulchellum Senecio aureus Setaria lutescens Sisyrinchium angustifolium Smilax bona-nox Solidago delicatula Sorghastrum nutans Sorghum halepense Specularia leptocarpa (= Triodanis leptocarpa) S. perfoliata (= Triodanis perfoliata) Sphenopholis obtusata Sporobolus clandestinus Stellaria media Strophostyles helvola Symphoricarpos orbiculatus Toxicodendron radicans (=Rhus radicans) Tragia ramosa Tridens flavus Trifolium dubium Triodanis leptocarpa T. perfoliata Ulmus alata U. rubra Uniola latifolia

Valerianella radiata

Verbena urticifolia Verbesina virginica Vernonia baldwinii Viburnum prunifolium Vicia villosa Viola langloisii V. rafinesquii V. sororia Vitis acerifolia Woodsia obtusa Zanthoxylum americanum Zizia aurea

Bullrush Small Skullcap Yellow Stonecrop Pink Stonecrop Groundse1 Foxtail Blue-eyed Grass Greenbrier -----Indian Grass Johnson Grass Venus Looking-glass Clasping Venus Lookingglass Prairie Wedgegrass Sand Dropseed Common Chickweed Wild Bean Buckbrush Poison Ivy Branching Noseburn Purple top Hop Clover Venus Looking-glass Clasping Venus Lookingglass Winged Elm Slippery Elm Fish-on-a-fishin-pole Grass Common Beaked Cornsalad White Vervain Whitecrownbeard Ironweed Black Haw Hairy Vetch Lanceleaf Violet Field Pansy Downy Blue Violet **Bush Grape** Wood Fern Prickly Ash Golden Alexanders

VITA

Kimberly A. Shannon

Candidate for the degree of

Master of Science

Thesis: A FLORISTIC SURVEY OF THE NATURE CONSERVANCY'S PRESERVE IN JOHNSTON COUNTY, OKLAHOMA

Major Field: Natural and Applied Sciences

Biographical:

- Personal Data: Born in Saint Louis, Missouri, on March 3, 1964, the daughter of R. Thomas and Judith D. Kuehnert. Married to John N. Shannon in Tulsa, Oklahoma, on October 6, 1984.
- Education: Graduated from Memorial High School, Tulsa, Oklahoma in May 1982; received Bachelor of Science degree in Biology from Oklahoma State University, Stillwater, Oklahoma in December 1994. Completed the requirements for the Master of Science degree with a major in Natural Sciences at Oklahoma State University in May, 1997.
- Experience: Employed by Oklahoma State University, Department of Botany as an undergraduate and graduate teaching assistant, 1994 to 1997. Employed by Oklahoma State University Fish and Wildlife Cooperative during summer of 1994 as field technician at the Salt Plains National Wildlife Refuge and intermittently from 1994 thru 1996 for work on a herpetological study in Ouachita Mountains, Arkansas. Employed as an instructor for OSU's "Exploring Contemporary Biological Dilemmas" course, a program for Native Americans in Biological Sciences, June 1995. Employed as Field Botany teaching assistant for two week period at OU Biological Research Station in Kingston, Oklahoma, May 1995 and 1996. Employed part-time by The Nature Conservancy, Oklahoma Chapter, Tulsa, Oklahoma, spring 1997.

Professional Memberships: Oklahoma Native Plant Society, Oklahoma Academy of Science, National Speleological Society