SPECIES COMPOSITION OF OLD SETTLER SILT-LOAM PRAIRIES

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Abstract. Over the course of a decade, studies were conducted throughout northern Illinois and northeastern Indiana to locate old settler cemeteries containing prairie vegetation and to determine their species composition. Of the 824 cemeteries investigated in 42 counties in northern Illinois and in 20 counties in northwestern Indiana, 150 contained some prairie species. Of the 44 cemeteries that had sufficient prairie species to warrant study, 29 were silt-loam prairies, 14 were sand and silt-loam savannas, and one was a sand prairie. A total of 180 species of prairie plants were found in the 29 silt-loam cemetery prairies, belonging to 43 different families. The Compositae had the most representatives with 48 species (26%), followed by Gramineae with 15 (8%), Cyperaceae with 14 species (7%), and the Leguminosae had 12 (6%) species. The soils present in these cemeteries had deep A-horizons, and most showed no evidence of ever having been plowed. They represent a cross-section of the soil types found in northern Illinois and northwestern Indiana, with loess soils in the west and till soils in the east. This difference in soil type influences the relative abundance of some prairie species.

Key Words. cemetery prairies, eastern prairie, tallgrass prairie, old settler cemeteries, Illinois, Indiana

INTRODUCTION

Although the Illinois tallgrass prairie is known through historical accounts, its species composition is not well documented. Most of the early reports (Short 1845) were of a general nature, with such vague names as "goldenrods, asters, etc." Some information about the prairie's composition can be gleaned from the annotated plant list of Mead (1846) and Brendel (1887). In this century, Gleason (1910) studied the composition of the Illinois sand prairies, Gates (1912) the sand prairies of the beach area in northeastern Illinois, Evers (1955) the hill prairies along the Mississippi River, and Fell and Fell (1956) studied the hill prairies along the Rock River in northern Illinois. Both Vestal (1914) and Sampson (1921) reported on the heavier silt-loam prairies of northern Illinois, and Betz and Cole (1969) recorded the vegetational changes which occurred on a "black-soil" prairie originally studied by Paintin (1928).

Even though many ecological texts mention that remnant prairies are to be found in old settler cemeteries, They are described in relatively few papers. Lantz (1969) and Morrissey (1956) reported on the species composition of two different cemetery prairies in Iowa, and cemetery prairies were used in studies by Fay (1953) in Iowa and by Penalosa (1963) in California. Wright and Wright (1948) used these old settler cemeteries as a source of data to study the ecological relationships existing between the Palouse and Mixed-Grass prairies in south central Montana.

Since August 1961, when one of the authors accidentally found an old cemetery prairie in northern Will County, an extended search in the Chicago area began to disclose more. Since that time, especially during the 1970s,Th)Torganized searches were conducted to find cemetery prairies in northern Illinois and northwestern Indiana.

METHODS

General highway maps, prepared by the Illinois Department of Public Works and Buildings, cover individual counties and show the locations of cemeteries. Using these maps, visits were made initially to all cemeteries in a given area. However, it soon became evident that many of the cemeteries had originally been in wooded areas and did not have the potential to contain surviving prairie vegetation. Based on this consideration, it was decided to restrict exploratory visits to cemeteries which originally had been placed on the prairie or in the prairie-forest transition. Thus, it was necessary to learn the soil type or types of a cemetery to determine if it should be inspected. Accordingly, soil reports and maps, prepared by the Agricultural Experiment Station of the University of Illinois in cooperation with the Soil Conservation Service of the U. S. Department of Agriculture, were used for this purpose. Only cemeteries having soil types characteristic of prairie or prairie-forest transition were selected for exploratory visits, and the number of cemeteries designated for study was reduced substantially.

In each cemetery, certain prairie indicator species were sought, especially the warm-season grasses, such as big bluestem (*Andropogon gerardii* Vitman) and indiangrass [*Sorghastrum nutans* (L.) Nash]. These grasses often persisted around tombstones and in fence rows, even in those cemeteries which had been heavily mowed. In many cases the entire cemetery was still prairie. In others, prairie vegetation was to be found only in relatively undisturbed sections, such as areas in the front, the rear, and the sides. Those that were being regularly mowed were checked for depauperate prairie plants, such as lead plant (*Amorpha canescens* Pursh), wild bergamot (*Monarda fistulosa* L.) and yellow coneflower [*Ratibida pinnata* (Vent) Barnh.]. These sometimes were found surviving the mowing within the Kentucky bluegrass (*Poa pratensis* L.) turf. Efforts were made to urge the cemetery boards to cease mowing, so that enhanced growth would better permit the determination of the species composition still found within the cemeteries.

Vascular plants were identified and recorded at the time the cemeteries were initially evaluated. If the cemetery contained a substantial array of prairie vegetation as shown by the presence of at least 30 prairie species, a more intensive study was conducted. This necessitated revisiting the cemetery prairie at various times throughout the growing season for two or more years. Several cemetery prairies were visited more than a dozen times in order to catalog all the species. Nomenclature follows Fernald (1950) and is in conformity with that used by Swink and Wilhelm (1979). In addition to recording the species present, soil samples were taken to determine the depth of the A-horizon and to note other soil characteristics.

RESULTS

Of the 824 cemeteries in 42 counties of northern Illinois and in 20 counties in northwestern Indiana, 150 contained some prairie species. Of the 44 cemeteries that were deemed worthy of further study by having at least 30 prairie species, 29 were silt-loam prairies, one was a sand prairie, and 14 were silt-loam and sand savannas. Only the 29 silt-loam cemetery prairies are discussed in this paper.

The 180 species of prairie plants found in these silt-loam cemetery prairies belong to 43 different families (Table 1). The Compositae had the most representatives with 48 species (26%), followed by Gramineae with 15 (8%), Cyperaceae 14 (7%), and Leguminosae 12 (6%). These percentages generally correspond to the percentages reported by Curtis (1959) for the mesic prairies of

Table 1. Species composition of Illinois-Indiana silt-loam cemetery prairies.

	Cemetery Prairie[1]																													
Species	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*Total*
Agoseris cuspidata[2]																													X	1
Allium canadense																	X	X	X	X	X	X	X		X	X				9
Amorpha canescens	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	28
Andropogon gerardii	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	29
Andropogon scoparius	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	29
Androsace occidentalis									X																					1
Anemone canadensis									X						X															2
Anemone cylindrica							X	X					X	X		X	X			X	X	X				X	X	X		12
Anemone patens wolf.																												X		1
Anemone virginiana		X															X	X												3
Antennaria neglecta	X	X	X		X				X		X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X		21
Antennaria plantaginifolia		X	X	X									X				X		X		X			X		X				9
Apios americana									X	X																				2
Apocynum cannabinum														X						X										2
Apocynum sibiricum		X		X			X	X			X		X		X		X		X		X	X	X	X			X	X		15
Asclepias amplexicaulis		X									X																			2
Asclepias sullivantii																	X			X	X	X	X	X	X					7
Asclepias tuberosa		X				X				X							X						X			X				6
Asclepias verticillata	X	X	X	X	X	X			X		X	X	X	X		X	X		X	X	X	X	X	X	X		X	X	X	23
Asclepias viridiflora	X	X	X	X							X		X	X		X	X		X	X	X	X		X			X	X	X	17
Aster azureus	X	X	X	X	X	X		X		X		X	X			X		X	X	X	X				X	X	X			18
Aster ericoides	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	26
Aster laevis		X					X		X			X	X	X		X	X	X	X	X	X	X		X			X	X		16
Aster linariifolius																												X		1
Aster novae-angliae							X					X				X	X	X					X	X	X	X				9
Aster ptarmicoides																										X				1
Aster sericeus																X												X		2
Aster simplex					X				X						X								X							4
Astragalus canadensis						X		X		X			X							X										5
Baptisia leucantha																						X	X							2
Baptisia leucophaea				X			X		X			X			X	X	X			X		X	X			X		X		12
Blephilia ciliata																						X							1	
Bouteloua curtipendula																											X	X	X	3
Cacalia tuberosa		X																					X							2
Calamagrostis canadensis			X									X	X	X	X						X									6
Carex bicknellii	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X			X	X		25
Carex brevior						X																								1
Carex cephaloidea								X																						1
Carex conoidea														X																1
Carex cristatella																					X	X								2
Carex gravida																							X							1
Carex meadii		X					X										X						X							4
Carex pensylvanica	X			X	X			X	X			X	X		X	X	X	X	X		X				X		X	X		16
Carex stipata																			X		X	X								3
Carex stricta															X			X												2
Carex tetanica																										X		X	X	3
Carex vulpinoidea																	X					X	X							3
Cassia fasciculata																				X				X						2
Ceanothus americanus	X	X		X	X	X	X	X	X	X	X	X			X		X		X	X			X					X	X	18
Cirsium discolor		X																		X			X							3
Cirsium hillii	X	X		X	X	X				X		X		X		X	X		X		X				X	X				14
Claytonia virginica																			X											1
Comandra richardsiana		X		X			X	X	X	X		X		X	X	X	X	X		X	X		X			X		X		17
Convolvulus sepium									X																					1
Coreopsis palmata		X				X			X	X					X	X		X		X	X	X	X			X	X	X		14
Coreopsis tripteris																	X			X		X	X			X				5
Desmodium canadense		X				X		X		X		X	X	X	X	X	X			X			X	X						13
Desmodium canescens																													X	1
Desmodium illinoense		X	X		X	X	X	X			X	X			X		X		X	X		X	X	X			X	X	X	18
Dodecatheon meadia	X				X				X	X				X		X		X	X	X	X		X		X	X	X	X		15

Table 1. Continued

	Cemetery Prairie[1]																													
Species	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*Total*
Echinacea pallida		X	X	X	X	X		X	X	X		X		X	X	X	X			X		X						X		16
Eleocharis compressa																						X								1
Elymus canadensis						X		X			X			X	X	X	X		X	X	X				X		X	X		13
Equisetum hyemale	X	X		X	X	X	X	X	X					X	X	X		X								X		X		14
Eragrostis spectabilis																													X	1
Erigeron strigosus	X	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	26
Eryngium yuccifolium	X	X	X	X		X	X	X		X		X	X	X		X	X	X	X	X		X	X			X	X	X		21
Eupatorium perfoliatum																		X												1
Euphorbia corollata	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	29
Fragaria virginiana	X	X				X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	23
Galium obtusum						X									X				X											3
Gaura biennis																X				X		X	X							4
Gentiana puberula	X	X	X	X		X		X	X	X				X	X	X	X	X	X	X	X	X	X			X		X		20
Geum triflorum																											X	X		2
Glyceria striata																					X									1
Habenaria leucophaea		X																					X							2
Helianthemum canadense		X																												1
Helianthus grosseserratus	X	X		X	X	X		X		X		X	X	X	X	X	X	X		X	X	X	X	X	X	X		X		22
Helianthus laetiflorus rig.	X	X	X	X	X	X	X	X	X	X	X		X		X	X		X		X	X	X	X	X	X	X	X	X	X	25
Helianthus mollis																	X					X	X							3
Helianthus occidentalis	X	X							X		X			X		X										X	X			8
Heliopsis helianthoides		X	X			X	X	X		X					X		X								X			X		10
Heuchera richardsonii						X				X				X		X		X								X				6
Hieracium longipilum		X	X	X																										3
Houstonia longifolia											X										X		X							2
Hypericum sphaerocarpum																	X				X		X							3
Hypoxis hirsuta	X	X								X						X	X	X	X	X			X			X				10
Isanthus brachiatus																													X	1
Juncus dudleyi																	X													1
Koeleria cristata																			X	X	X					X				4
Krigia biflora										X													X			X				3
Kuhnia eupatorioides		X	X		X	X	X	X							X										X				X	9
Lactuca canadensis		X				X																	X							3
Leptoloma cognatum																					X									1
Lespedeza capitata		X	X	X		X	X	X		X	X	X			X	X	X	X	X	X	X	X	X	X		X			X	21
Liatris aspera		X					X	X	X				X			X		X		X		X				X	X	X		12
Liatris cylindracea																												X		1
Liatris pycnostachya																	X			X		X	X	X						5
Liatris spicata																										X				1
Lilium philadelphicum and.								X	X							X	X	X								X				6
Lilium michiganense							X																X							1
Lithospermum canescens	X	X	X			X	X	X	X	X		X		X	X	X	X	X	X	X	X	X		X		X	X	X		22
Lithospermum incisum																											X	X		2
Lobelia spicata	X	X	X	X	X				X	X		X	X	X		X	X		X	X	X	X	X	X	X	X				20
Lysimachia ciliata						X															X									2
Lysimachia lanceolata					X		X								X		X	X	X	X	X	X	X							10
Lysimachia quadriflora				X												X		X												3
Lythrum alatum																		X												1
Monarda fistulosa	X		X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X		X	X		X		22
Oenothera pilosella																							X							1
Orobanche uniflora		X																												1
Oxalis violacea	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	25
Panicum implicatum	X	X	X		X	X			X					X			X		X	X	X	X		X	X					14
Panicum leibergii	X			X	X	X	X	X	X	X		X	X		X	X	X	X		X	X		X			X	X	X		20
Panicum oligosanthes scrib.			X						X		X																	X	X	5

Table 1. Continued

	Cemetery Prairie[1]																												
Species	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*Total*
Panicum villosissimum						X																								1
Panicum virgatum		X	X	X			X	X					X						X	X	X	X	X	X	X					13
Parthenium integrifolium	X			X	X				X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X				19
Pedicularis canadensis	X					X			X	X		X				X	X	X	X	X	X	X								12
Perideridia americana											X								X		X		X							4
Penstemon calycosus																	X		X											2
Penstemon digitalis														X																1
Petalostemum candidum	X			X	X	X	X	X	X	X		X		X		X			X	X	X		X				X	X		17
Petalostemum purpureum	X	X	X			X				X		X	X	X	X	X	X	X	X	X	X	X	X			X	X			19
Phlox glaberrima int.																							X							1
Phlox pilosa	X		X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X			X	X	X		23
Physalis heterophylla		X	X			X			X				X				X	X	X	X		X	X						X	12
Physalis virginiana			X		X	X	X		X	X		X	X				X	X	X	X	X	X	X		X		X	X		18
Physostegia virginiana						X	X	X				X			X	X	X			X	X			X		X				11
Polygala sanguinea	X	X																	X			X								4
Polygala senega																X											X			2
Polygala verticillata																X	X				X		X							4
Polygonum coccineum																					X									1
Potentilla arguta		X	X	X	X	X	X		X			X		X		X			X	X	X		X	X			X	X		17
Potentilla simplex																					X	X	X							3
Prenanthes aspera	X	X		X	X	X	X		X	X		X		X		X	X		X	X	X	X		X				X		18
Pycnanthemum tenuifolium											X						X					X	X							4
Pycnanthemum virginianum				X			X	X		X		X	X	X	X	X	X	X		X	X	X	X	X		X				17
Ratibida pinnata	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	26		
Rosa carolina	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		27
Rudbeckia hirta	X	X	X	X		X	X		X	X		X	X	X		X	X	X	X	X	X	X	X	X		X			X	22
Ruellia humilis											X						X		X	X	X	X	X		X				X	9
Salix humilis		X	X						X	X	X			X		X	X									X				9
Scirpus atrovirens																					X									1
Scirpus lineatus																	X				X	X	X							4
Scutellaria parvula				X	X			X			X		X			X	X	X		X	X							X		11
Senecio pauperculus				X	X																									2
Senecio plattensis		X	X			X			X	X																				5
Silphium integrifolium	X	X					X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		21
Silphium laciniatum	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		25
Silphium terebinthinaceum											X		X	X		X	X	X	X	X	X	X	X	X	X	X				14
Sisyrinchium albidum	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	25
Smilacina stellata														X						X										2
Solidago gigantea		X				X			X	X				X		X	X			X	X		X					X		11
Solidago graminifolia						X		X																X		X	X			5
Solidago gymnospermoides																											X			1
Solidago juncea	X	X	X	X	X		X			X		X								X	X	X	X		X	X				14
Solidago nemoralis			X						X					X					X	X	X	X	X	X		X	X	X		12
Solidago rigida	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		26
Solidago speciosa	X			X			X		X	X																		X		6
Sorghastrum nutans	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	28
Spartina pectinata							X	X											X						X					4
Sphenopholis obtusata																			X		X		X							3
Spiranthes lacera																										X				1
Sporobolus heterolepis	X		X	X	X	X	X	X	X			X		X	X	X	X	X	X	X	X	X	X		X	X	X	X		23
Stachys palustris														X																1
Stachys tenuifolia				X		X	X			X											X			X						6
Stipa spartea	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		25
Strophostyles helvola																						X								1
Teucrium canadense						X		X																						2

Table 1. Continued

	Cemetery Prairie[1]																													
Species	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*Total*
Thalictrum dasycarpum				X						X								X												3
Thalictrum revolutum														X							X									2
Thaspium barbinode																							X							1
Tradescantia ohiensis	X	X						X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	19
Verbena hastata										X																				1
Verbena stricta			X			X		X																					X	4
Vernonia missurica									X								X						X							3
Veronicastrum virginicum		X					X	X				X	X	X	X	X		X			X									10
Vicia americana																		X								X				2
Viola papilionacea	X		X	X	X	X	X	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X		X		X	23
Viola pedata		X							X										X		X					X				5
Viola pedatifida	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		28
Viola sagittata																						X				X				2
Zizia aptera	X			X	X					X		X	X	X		X											X	X		10
Zizia aurea					X	X							X	X			X	X	X	X	X		X	X		X				12
TOTAL	52	71	47	53	45	65	54	56	60	58	36	54	47	66	49	70	84	62	70	77	86	70	89	49	41	66	49	63	30	1719

[1]The same number is used in both Tables 2 and 3 to designate a specific cemetery prairie.
[2]Authorities can be found in Fernald (1950).

Wisconsin: Compositae 26.1%, Gramineae 10.2%, and Leguminosae (7.4%), but the Cyperaceae were not listed. These similarities suggest that the sample of species obtained from the cemetery prairies is substantially representative of the species in the pre-settlement mesic prairies. Some species, such as big bluestem, were found in all of the 29 silt-loam cemetery prairies. Others, such as the prairie white fringed orchid [*Habenaria leucophaea* (Nutt.) Gray] and the prairie dandelion [*Agoseris cuspidata* (Pursh.) Raf.], were recorded only once.

The number of species found in these prairies varied between 30 in the dry prairie in the Granville Cemetery of Tippecanoe County, Indiana, to 89 in the mesic prairie in the Pine Ridge Cemetery of Iroquois County, Illinois (Table 2).

In addition to these 180 prairie species, 73 species of non-native herbaceous plants were recorded, such as Kentucky bluegrass, Queen Anne's lace (*Daucus carota* L.), and English plantain (*Plantago lanceolata* L.); 22 species of woody plants, such as gray dogwood (*Cornus racemosa* Lam.), wild black cherry (*Prunus serotina* Ehrh.), and lilac (*Syringa vulgaris* L.); and 13 species of cultivated forbs, such as spreading bellflower (*Campanula rapunculoides* L.), orange day-lily (*Hemerocallis fulva* L.), and cypress spurge (*Euphorbia cyparissias* L.). The number and kind of these non-prairie species were dependent in part on the past management of the cemetery (whether mowed, grazed, or trampled, or on the kind of decorative plants placed on the graves). In those cemetery prairies which were never mowed or in which mowing had ceased many years ago, and had been annually burned, non-prairie species were almost non-existent.

DISCUSSION

The presence of 180 different prairie species in these silt-loam cemetery prairies indicates the comparative richness of the pre-settlement Illinois-Indiana prairie. This wealth of species is probably due in part to the relatively large amount of precipitation (840 mm) generally available throughout the growing season. Yet the total number of species associated with pre-settlement Illinois and Indiana prairies may have been much higher than this study indicates, because only part of the prairie ecosystem is represented in the cemetery prairies. The settlers chose only the swells on the till plain when selecting sites for their cemeteries and not the swales. Therefore, wet-prairie and wet-mesic prairie species, such a blue-joint grass [*Calamagrostis canadensis* (Michx.) Nutt.], prairie cord grass (*Spartina pectinata* Link.), Indian plantain (*Cacalia tuberosa* Nutt.), and bottle gentian (*Genetiana andrewsii* Griseb.) were uncommon and often missing in the cemetery prairies. If present, they are usually confined to the periphery of the cemetery in an area of moist soil.

The great variability in the number and kinds of species found in these cemetery prairies is no doubt due in part to chance, i.e. individual species were not present when the pre-settlement prairie section was enclosed for use as a settler cemetery. It may also be due to human disturbances to which the cemetery has been subjected during the past century, which may have lead to the disappearance of certain species. This appears to have happened to Mead's milkweed (*Asclepias meadii* Torrey) which was reported in the Pine Hill Cemetery north of Davenport, Iowa, in 1899, but not seen a half-century later (Morrissey 1956). Broughton Cemetery (Livingston #4) contains only one clump of betony (*Pedicularis canadensis* L.) and only a few specimens of prairie gentian (*Gentiana puberula* Michx.), and hoary puccoon [*Lithospermum canescens* (Michx.) Lehm.] after two or three mowings annually for decades. Whereas, the Vermon Cemetery (Will #1), which has not been mowed but has been burned annually for more than a quarter of a century, has many specimens of these same species. Time of mowing is also important. For about 20 years, the Clyde Cemetery (Whiteside #1) was not mowed until midsummer because the farmer-caretaker liked the spring-flowering shooting stars (*Dodecatheon meadia* L.) and wanted them to set seed. Consequently, this cemetery prairie has shooting stars and prairie violets (*Viola pedatifida* G. Don) in abundance; whereas, the late-blooming smooth blue aster (*Aster laevis* L.) and prairie gentian (*Genetiana puberula* Michx.) are rarely found.

The soils present in the cemeteries represent a cross-section of the soil-types found in northern Illinois and northwestern Indiana. These range from the loess soils (Tama and Catlin) found in western Illinois to the glacial till soils (Saybrook, Elliott, Clarence, Swygert, and Parr) found in eastern Illinois and western Indiana (Table 3). In general, the loess soils were better drained and drier than the till soils. Therefore, these soils support higher populations of species such as purple coneflower (*Echinacea pallida* Nutt.), porcupine grass (*Stipa spartea* Trin.), and sky-blue aster (*Aster azur-*

Table 2. Total number of species and size (ha) of Illinois-Indiana silt-loam cemetery prairies.

Type of silt-loam and location	*Number of species*	*Area*
	-- number --	*-- ha --*
A. **Tama Silt-Loam**		
1. Bureau #1 (Hetzler)	52	0.4
2. Henry #1 (Munson)	71	2.0
3. Henry #2 (Hoose)	47	0.4
4. Lee #1 (Temperance Hill)	53	0.4
5. Lee #2 (DeWolf)	45	0.2
6. Mercer #1 (Brownlee)	65	0.8
7. Putman #1 (Mt. Palatine)	54	0.8
8. Warren #1 (Spring Grove)	56	0.4
9. Whiteside #1(Clyde)	60	0.4
10. Whiteside #2 (Heaton)	58	0.3
B. **Catlin Silt-Loam**		
11. Champaign #1 (Jessee)	36	0.4
12. LaSalle #1 (Four-Mile Grove)	54	0.4
13. LaSalle #2 (St.Clara)	47	0.8
C. **Saybrook Silt-Loam**		
14. DeKalb #1 (Afton)	66	1.2
15. Marshall #1 (Camp Grove)	49	0.4
16. Will #1 (Vermont)	70	0.4
D. **Elliott Silt-Loam**		
17. Ford #1 (Prospect)	84	2.0
18. DuPage #1 (Stephen's)	62	0.3
19. Livingston #4 (Broughton)	70	0.9
20. McLean #1 (Weston)	77	2.0
E. **Clarence Silt-Loam**		
21. Livingston #1 (Sunbury)	86	0.4
22. Vermilion #1 (Pellville)	70	0.4
F. **Swygert Silt-Loam**		
23. Iroquois #1 (Pine Ridge)	89	1.4
24. Livingston #2 (Nevada)	49	1.2
25. Livingston #5 (Sullivan)	41	0.4
G. **Parr Silt-Loam**		
26. Lake-Ind #1 (German Methodist)	66	0.4
H. **Dry Prairies**		
27. McHenry #1 (Queen Anne)	49	0.4
28. Ogle #1 (Beach)	63	0.8
29. Tippecanoe-Ind #1 (Granville)	30	0.4

eus Lindl.) than do the till soils. On the other hand, species such as alum root (*Heuchera richardsonii* R. Br.), Culver's root [*Veronicastrum virginicum* (L.) Farw.], and smooth blue aster (*Aster laevis* L.) usually sustain higher populations on the wetter, more poorly drained till soils of eastern Illinois and western Indiana.

In most of these cemetery prairies the depth of the A-horizon averages 36 to 48 cm and showed no evidence of ever having been plowed. However, it is possible that two of these cemetery prairies, the Hoose Cemetery (Henry #2) and the Heaton Cemetery (Whiteside #2) may have been subjected to some plowing, based on shallower A-horizons. Sunbury (Livingston #1) also had a somewhat shallower A-horizon, but the richness of species present suggested that it had not been plowed. The somewhat shallow-A horizon may have been the consequence of the sloping surface of the section where the prairie survived. Nevada Cemetery (Livingston #2) lacked certain species, such as lead plant, prairie compass plant (*Silphium laciniatum* L.), and prairie clovers (*Petalostemum* spp.), suggesting that there was an early history of plowing prior to the establishment of the cemetery. The earliest tombstone, dating from the 1880s, would have made possible the cropping of the area before the cemetery was established. In contrast, the other cemeteries dated from the 1840s and 1850s. This possible earlier period of plowing for the Nevada Cemetery would appear, however, to have been of short duration, based on the fact that the soil A-horizon is 36 to 42 cm deep and not appreciably eroded.

Some geographical differences were noted in the distribution of certain species. For example, prairie smoke (*Geum triflorum* Pursh) was found only in the more northern cemetery prairies, and long-leaved bluets (*Houstonia longifolia* Gaertn.) had a more southerly distribution.

Although these cemetery prairies are small in size (Table 2), they are perhaps the best surviving remnants of the mesic to dry-mesic pre-settlement Illinois-Indiana prairie. However, since these cemetery prairies are essentially terrestrial islands with their isolation and small populations, extinction of some species and genetic drift will occur (MacArthur and Wilson 1967). Even with adequate protection and good management, these cemetery prairies will slowly degrade without the continual introduction of new genetic material. These cemetery prairies still possess a valuable array of species which can be used in evaluating current restorations of Illinois and Indiana prairies. Further, the unplowed soils provide a measure of the extent to which erosion has taken its toll in the surrounding fields. Ten of these cemetery prairies have been designated as nature preserves by Illinois and Indiana. With their charm and beauty, these cemetery prairie remnants give a small glimpse of what the settlers of the pre-settlement Illinois-Indiana prairies first saw when they entered this region.

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Table 3. Soils of the Illinois-Indiana silt-loam cemetery prairies.

Type of silt-loam and location	*Depth of A-horizon*	*Thickness of loess*	*Type of till*
	---------- cm ---------	---------- m ----------	
A. **Tama Silt-Loam**			
1. Bureau #1 (Hetzler)	32-35	> 1.5	none
2. Henry #1 (Munson)	25-27	> 1.5	none
3. Henry #2 (Hoose)	20-22	> 1.5	none
4. Lee #1 (Temperance Hill)	42-45	> 1.5	none
5. Lee #2 (DeWolf)	37-40	> 1.5	none
6. Mercer #1 (Brownlee)	40-42	> 1.5	none
7. Putnam #1 (Mt.Palatine)	40-42	> 1.5	none
8. Warren #1 (Spring Grove)	37-40	> 1.5	none
9. Whiteside #1 (Clyde)	32-35	> 1.5	none
10. Whiteside #2 (Heaton)	12-17	> 1.5	none
B. **Catlin Silt-Loam**			
11. Champaign #1 (Jessee)	35-40	0.9-1.5	none
12. LaSalle #1 (Four-Mile Grove)	35-40	0.9-1.5	none
13. LaSalle #2 (St. Clara)	35-40	0.9-1.5	none
C. **Saybrook Silt-Loam**			
14. DeKalb #1 (Afton)	25-27	0.45-0.9	loam
15. Marshall #1 (Camp Grove)	37-40	0.45-0.9	loam
16. Will #1 (Vermont)	35-40	0.45-0.9	loam
D. **Elliott Silt-Loam**			
17. Ford #1 (Prospect)	40-45	0.45-0.9	silty clay loam
18. DuPage #1 (St. Stephen's)	35-40	0.45-0.9	silty clay loam
19. Livingston #4 (Broughton)	40-42	0.45-0.9	silty clay loam
20. McLean #1 (Weston)	40-45	0.45-0.9	silty clay loam
E. **Clarence Silt-Loam**			
21. Livingston #1 (Sunbury)	20-22	0.45-0.9	clay drift
22. Vermilion #1 (Pellville)	35-40	0.45-0.9	clay drift
F. **Swygert Silt-Loam**			
23. Iroquois #1 (Pine Ridge)	40-45	0.45-0.9	calcareous clay
24. Livingston #2 (Nevada)	40-42	0.45-0.9	calcareous clay
25. Livingston #5 (Sullivan)	40-45	0.45-0.9	calcareous clay
G. **Parr Silt-Loam**			
26. Lake-Ind #1 (German Methodist)	30-32	< 0.45	loam
H. **Dry Prairies (Various Soils)**			
27. McHenry #1 (Queen Anne)	32-35	-----	sandy loam
28. Ogle #1 (Beach)	-----		gravel
29. Tippecanoe-Ind #1 (Granville)	30-35		none

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