

## Buettner Glades

William E. McClain

Buettner Glades were visited during the growing seasons of 2010 and 2011 to collect vascular plant specimens and study the composition and structure of the two glade communities. Voucher specimens were collected and deposited in the Stover-Ebinger Herbarium of Eastern Illinois University in Charleston (EIU). Exotic species were identified using Gleason and Cronquist (1991) and Mohlenbrock (2002) while nomenclature follows Mohlenbrock (2002).

The ground layer vegetation was surveyed along one 50 m long transect (n = 50 at each site) located within characteristic glade vegetation. One m<sup>2</sup> quadrats were located along the transect at 1 m intervals (n = 50). Odd-numbered quadrats were placed to the right and even-numbered quadrats were placed to the left. A random numbers table was used to determine the number of meters (0-9) a quadrat was placed from the transect. Cover was determined using the Daubenmire cover class system (Daubenmire 1959) as modified by Bailey and Poulton (1968). From these data, frequency (%), relative frequency, mean cover (% of total cover), relative cover, and Importance Values (relative frequency + relative cover) were determined for each species found in the plots.

## **RESULTS**

A total of 175 vascular plant species representing 57 families and 114 genera were documented on the two glades, including 5 fern species representing four families,

1 gymnosperm species representing one family, 39 monocot species representing eight families and 130 dicot species representing forty-four families (Appendix 1). The most common families were the Asteraceae with 33 species, Poaceae (25), and Fabaceae (13). No threatened or endangered species was discovered during the survey, while 17 exotic species were encountered.

*Bouteloua curtipendula* (side-oats grama) dominated the east glade, accounting for 38.7 percent of the importance value while *Andropogon gerardii* was the dominant species on the west glade with an I.V. of 24.7 (Table 1). *Schizachyrium scoparium* (little bluestem) was second in importance on the east glade with an importance value of 23.6 compared to 10.2 on the west glade. *Ruellia humilis* (wild petunia) was the most important forb on the east glade (Table 2) while *Solidago ulmifolia* (elm-leaved goldenrod) was the most common wildflower on the west glade (Table 3). A total of 60 species were recorded for the plots on the glades. The values for rock, bare ground and litter were nearly identical at both sites (Table 1).

A comparison with other glade studies from Illinois reveals similarities, but distinct differences. *Bouteloua curtipendula* and *Schizachyrium scoparium* were the most important grasses present in three limestone glades in Calhoun County, Illinois based on a study conducted in 2002. In contrast to the Monroe County glades, the tall grasses, *Andropogon gerardii* and *Sorghastrum nutans* were confined to cracks or localized areas in the Calhoun County sites. Common wildflowers for Calhoun County were *Hedyotis nigricans* (narrow-leaved bluets), *Ruellia humilis* (wild petunia), and *Croton capitatus* (capitate croton). A total of 124 vascular plant species were present on the three glades, including 13 exotic species. The most significant difference was

the abundance of *Juniperus virginiana* (eastern red cedar) on the Calhoun County glades. The presence of this tree on these sites is much like the cedar barrens of Kentucky and Tennessee. The cover for exposed rock varied from slightly over 10 to more than 50 percent at one of the glades.

Comparisons such as these emphasize the need for the management and preservation of glade communities within Monroe and Randolph counties. Limestone glades in this region of the state are distinctly different from those in Calhoun County and other parts of the state. Studies of the insects or other animal life would likely yield similar results. Continued management of the Buettner Glades will undoubtedly show an increase in the size of the glade communities at each site.

A manuscript is currently being prepared on the results of the study of the Buettner Glades. This manuscript will be submitted to a scientific, peer-reviewed journal for publication. The date of publication will likely be later this year or next year, depending on length of the review process. This publication will be made available for all Clifftop members.

**APPENDIX I.** Vascular plant species encountered at the Buettner Limestone Glades, Monroe County, Illinois are listed alphabetical by family under the major plant groups. Collecting numbers are preceded by the initial of the collector (E = John E. Ebinger, M = William McClain). Specimens are deposited in the Stover/Ebinger herbarium, Eastern Illinois University herbarium (EIU), Charleston, Illinois. (\*exotic species)

#### FERN AND FEN-ALLIES

##### Aspleniaceae

*Asplenium platyneuron* (L.) Oakes: M2654

##### Dryopteridaceae

*Woodsia obtusa* (Spreng.) Torr.: M2700

##### Ophioglossaceae

*Botrychium virginianum* (L.) Sw.: M2655

*Ophioglossum engelmannii* Prantl.: M2808

##### Pteridaceae

*Pellaea atropurpurea* (L.) Link: E32504

#### GYMNOSPERMS

##### Cupressaceae

*Juniperus virginiana* L.: E32506

#### MONOCOTS

##### Agavaceae

*Manfreda virginica* (L.) Rose: E33130

##### Commelinaceae

*Tradescantia ohiensis* Raf.: M2663

##### Cyperaceae

*Carex alopecoidea* Tuckerm.: E32943

*Carex blanda* Dewey: M2801

*Carex cephalophora* Muhl.: M2679

*Carex festucacea* Schk.: M2710

*Carex hirsutella* Mack.: M2717  
*Carex jamesii* Schwein.: M2679a  
*Carex muehlenbergii* Schk.: M2812  
*Carex pensylvanica* Lam.: E33225

Iridaceae

*Sisyrinchium albidum* Raf.: M2800

Juncaceae

*Juncus tenuis* Willd.: E32918

Liliaceae

*Allium canadense* L.: M2644

Poaceae

*Agrostis hyemalis* (Walt.) BSP.: M2718  
*Andropogon gerardii* Vitman: E33226  
*Aristida purpurascens* Poir.: E32507  
*Bouteloua curtipendula* (Michx.) Torr.: E32508  
*Bromus pubescens* Muhl.: M2677  
*Chasmanthium latifolium* (Michx.) Yates: E32509  
\**Dactylis glomerata* L.: E32919  
*Danthonia spicata* (L.) Roem. & Schultes: M2706  
*Dichanthelium acuminatum* (Sw.) Gould & Clark: E32511  
*Dichanthelium boscii* (Poir.) Gould & Clark: E32510  
*Dichanthelium oligosanthes* (Schult.) Gould: E32512  
*Digitaria ischaemum* (Schreb.) Schreb.: E33237  
*Elymus villosus* Muhl.: E32513  
*Elymus virginicus* L.: E32514  
*Eragrostis spectabilis* (Pursh) Steud.: E32517  
\**Festuca arundinacea* Schreb.: M2680  
*Festuca subverticillata* (Pers.) E.B. Alexeev.: M2658a  
*Muhlenbergia sobolifera* (Muhl.) Trin.: E32516  
*Muhlenbergia sylvatica* (Torr.) Torr.: E32515  
\**Poa pratensis* L.: M2665  
*Schizachyrium scoparium* (Michx.) Nash: E33227  
\**Setaria viridis* (L.) Beauv.: E32519  
*Spenopholis obtusata* (Michx.) Scribn.: M2640  
*Tridens flavus* (L.) Hitchc.: E32520  
*Vulpia octoflora* (Walt.) Rydb.: M2629

Smilacaceae

*Smilax tamnoides* L.: E32920

DICOTS

Acanthaceae

*Ruellia humilis* Nutt.: E32921  
*Ruellia strepens* L.: E33131

Aceraceae

*Acer saccharum* Marsh.: E33229

Anacardiaceae

*Rhus aromatica* Ait.: E32521  
*Rhus copallina* L.: E33138  
*Rhus glabra* L.: E32922  
*Toxicodendron radicans* (L.) Kuntze: E33238

Apiaceae

*Osmorhiza longistylis* (Torr.) DC.: M2682  
*Polytaenia nuttallii* DC.: M2799  
*Sanicula canadensis* L.: M2685  
*Sanicula odorata* Pryer & Phillippe: E32522  
\**Torilis japonica* (Houtt.) DC.: M2667

Asclepiadaceae

*Asclepias tuberosa* L.: E32924  
*Asclepias viridiflora* Raf.: E32923

Asteraceae

*Ageratina altissima* (L.) R.M. King & H. Robins.: E32526  
*Ambrosia artemisiifolia* L.: E32525  
*Antennaria plantaginifolia* (L.) Hook.: M2798  
*Arnoglossum atriplicifolium* (L.) H. Robins.: E33231  
*Aster ericoides* L.: E33132  
*Aster oblongifolius* Nutt.: E33140  
*Aster oolentangiensis* Riddell: E32531  
*Aster patens* Aiton: E33133  
*Aster pilosus* Willd.: E33139  
*Aster turbinellus* Lindl.: E33236  
*Brickellia eupatorioides* (L.) Shinnars: E33134  
*Conzya canadensis* (L.) Cronq.: E33235  
*Coreopsis lanceolata* L.: M2634  
*Coreopsis palmata* Nutt. (observed)  
*Echinacea pallida* (Nutt.) Nutt.: M2690  
*Erigeron philadelphicus* L.: M2631  
*Erigeron strigosus* Muhl.: M2715  
*Eupatorium altissimum* L.: E32528  
*Helianthus divaricatus* L.: E32532  
*Helianthus strumossus* L.: M2753  
*Liatris cylindracea* Michx.: E32523  
*Parthenium integrifolium* L.: E32925

*Pseudognaphalium obtusifolium* (L.) Hilliard & Burt.: E32527  
*Ratibida pinnata* (Vent.) Barnh.: M2756  
*Rudbeckia hirta* L.: M2687  
*Senecio plattensis* Nutt.: M2638  
*Silphium intergrifolium* Michx.: E33135  
*Solidago nemoralis* Ait.: E32524  
*Solidago radula* Nutt.: E32530  
*Solidago ulmifolia* Muhl.: E32529  
\**Sonchus aspera* (L.) Hill: M2676  
*Verbesina helianthoides* Michx.: M2694  
*Vernonia missourica* Raf.: M2750

Bignoniaceae

*Campsis radicans* (L.) Seem.: E33136

Boraginaceae

*Hackelia virginiana* (L.) I.M. Johnston: E32533  
*Myosotis verna* Nutt.: M2652

Brassicaceae

*Descurainia pinnata* (Walt.) Britt.: M2794

Caesalpiniaceae

*Cercis canadensis* L.: E32534  
*Chamaecrista fasciculata* (Michx.) Greene: E32535  
*Gleditsia triacanthos* L.: E32931

Campanulaceae

*Campanulastrum americanum* (L.) Small: M2759  
*Triodanis perfoliata* (L.) Nieuwl.: M2668

Caprifoliaceae

\**Lonicera japonica* Thunb.: E32926  
*Symphoricarpos orbiculatus* Moench.: E32927

Caryophyllaceae

\**Dianthus armeria* L.: M2712

Cornaceae

*Cornus drummondii* C.A. Mey.: E32536

Ebenaceae

*Diospyros virginiana* L.: E33230

Euphorbiaceae

*Acalypha gracilens* Gray: E32537

*Croton monanthogynus* Michx.: E32539  
*Euphorbia corollata* L.: E32538  
*Poinsettia dentata* (Michx.) Kl. & Garcke: E32540

Fabaceae

*Ampicarpaea bracteata* (L.) Fern.: E32546  
*Dalea candida* (Michx.) Willd.: M2659  
*Dalea purpurea* Vent.: E32545  
*Desmodium glutinosum* (Muhl.) A. Wood: E32543  
*Desmodium paniculatum* (L.) DC.: E32542  
*Lespedeza capitata* Michx.: E33141  
*Lespedeza violacea* (L.) Pers.: E33142  
*Lespedeza virginica* (L.) Britt.: E32541  
\**Melilotus albus* Medic: M2664  
*Strophostyles leiosperma* (Torr. & Gray) Piper: M2766  
*Stylosanthes biflora* (L.) BSP.: E32544  
\**Trifolium campestre* Schreb.: M2714  
\**Trifolium pratense* L.: M2670

Fagaceae

*Quercus alba* L.: E32928  
*Quercus muhlenbergii* Engelm.: E32548  
*Quercus rubra* L.: E33228  
*Quercus stellata* Wangh.: E32929

Gentianaceae

*Sabatia angularis* (L.) Pursh: M2748

Hypericaceae

*Hypericum sphaerocarpum* Michx.: E32549

Juglandaceae

*Carya texana* Buckl.: E32550

Lamiaceae

*Monarda bradburiana* Beck: M2637  
*Pycnanthemum tenuifolium* Schrad.: M2757  
*Scutellaria parvula* Michx.: M2641

Lauraceae

*Sassafras albidum* (Nutt.) Nees: E32930

Menispermaceae

*Menispermum canadense* L. (observed)

Moraceae



\**Morus tatarica* L.: E32932

Oleaceae

*Fraxinus americana* L.: E32933

Onagraceae

*Circaea lutetiana* Aschers. & Magnus: E32934

Oxalidaceae

*Oxalis stricta* L.: M2641a

Passifloraceae

*Passiflora lutea* L.: E32935

Phytolaccaceae

*Phytolacca americana* L.: M2684

Plantaginaceae

\**Plantago lanceolata* L.: M2705

*Plantago virginica* L.: M2713

Polemoniaceae

*Phlox pilosa* L.: E32551

Ranunculaceae

*Ranunculus micrantha* Torr. & Gray: M2810

Rhamnaceae

*Ceanothus americanus* L.: M2683

*Frangula caroliniana* (Walt.) Mohlenbr.: M2674

Rosaceae

*Agrimonia pubescens* Wallr.: E32553

*Geum canadense* Jacq.: E32552

\**Potentilla recta* L.: M2704

*Rosa carolina* L.: M2707

\**Rosa multiflora* Thunb.: E32936

*Rubus flagellaris* Willd.: M2708

*Rubus occidentalis* L.: E33232

*Rubus pensilvanicus* Poir.: M2632

Rubiaceae

*Galium aparine* L.: M2805

*Galium circaezans* Michx.: M2698

*Galium pilosum* Ait.: M2660

*Houstonia longifolia* Gaertn.: M2635

Saxifragaceae

*Heuchera americana* L.: M2819

Scrophulariaceae

*Agalinis tenuifolia* Vahl.: E32554

*Aureolaria flava* (L.) Farw.: E33137

*Penstemon hirsutus* (L.) Willd.: M2642

*Penstemon pallidus* Small: M2636

\**Verbascum thapsus* L.: E32937

Simaroubaceae

\**Ailanthus altissima* (Mill.) Swingle: E32938

Solanaceae

*Physalis heterosphylla* Nees: E32939

*Solanum carolinense* L.: M2669

Ulmaceae

*Celtis laevigata* Willd.: E32940

*Celtis occidentalis* L.: E32555

*Ulmus rubra* Muhl.: E33234

Urticaceae

*Parietaria pennsylvanica* Muhl.: M2678

Verbenaceae

*Glandularia canadensis* (L.) Nutt.: M2647

*Verbena urticifolia* L.: M2747

Vitaceae

*Parthenocissus quinquefolia* (L.) Planch.: E32556

*Vitis vulpina* L.: E33233

Table 1. Frequency (%), mean cover (% of total area), relative frequency, relative cover, and importance value (IV) for the ground layer species encountered in the East and West Glades, Buettner Limestone Glade Communities, Monroe County, Illinois. (\*exotics)

Species	East Glade			West Glade		
	Freq. %	Mean Cover	I. V.	Freq. %	Mean Cover	I. V.
<i>Bouteloua curtipendula</i>	93	10.53	38.7	73	3.30	18.5
<i>Schizachyrium scoparium</i>	63	6.13	23.6	43	1.70	10.2
<i>Andropogon gerardii</i>	57	6.32	23.3	70	5.53	24.7
<i>Ruellia humilis</i>	70	2.33	14.4	3	0.02	0.4
<i>Aster patens</i>	50	1.25	9.2	40	1.52	9.1
<i>Chamacrista fasciculata</i>	50	1.08	8.8	37	0.85	6.9
<i>Manfreda virginica</i>	50	0.67	7.7	--	--	--
<i>Brickellia eupatorioides</i>	37	0.93	6.8	23	0.93	5.5
<i>Lespedeza virginica</i>	33	0.83	6.1	23	0.93	5.6
<i>Muhlenbergia sobolifera</i>	10	1.85	6.1	13	0.23	2.2
<i>Aster oblongifolia</i>	30	0.82	5.6	23	3.85	14.2
<i>Solidago radula</i>	23	0.62	4.4	27	0.47	4.5
<i>Croton monanthogynus</i>	30	0.32	4.3	40	0.62	6.5
<i>Helianthus divaricatus</i>	23	0.53	4.2	13	0.23	2.2
<i>Campsis radicans</i>	20	0.43	3.5	--	--	--
<i>Acalypha gracilens</i>	23	0.12	3.1	13	0.07	1.7
<i>Echinacea pallida</i>	17	0.33	2.9	--	--	--
<i>Liatris cylindracea</i>	17	0.17	2.4	30	0.57	5.2
<i>Rhus copallina</i>	7	0.60	2.4	--	--	--
<i>Carex pensylvanica</i>	13	0.23	2.2	10	0.05	1.3
<i>Aster turbinellus</i>	10	0.30	2.0	3	0.10	0.7
<i>Dalea purpurea</i>	10	0.22	1.8	3	0.02	0.4
<i>Coreopsis palmata</i>	13	0.07	1.7	--	--	--
<i>Coreopsis lanceolata</i>	13	0.07	1.7	17	0.33	3.0
<i>Poinsettia dentata</i>	13	0.07	1.7	7	0.03	0.9
<i>Eupatorium altissimum</i>	7	0.20	1.3	7	0.60	2.6
<i>Lespedeza violacea</i>	7	0.20	1.3	10	1.10	4.5
<i>Rosa carolina</i>	7	0.12	1.1	--	--	--
<i>Aster oolentangiensis</i>	7	0.03	0.9	17	0.50	3.5

<i>Fraxinus americana</i>	7	0.03	0.9	--	--	--
<i>Aster ericoides</i>	3	0.10	0.7	--	--	--
<i>Dalea candida</i>	3	0.10	0.7	--	--	--
<i>Diospyros virginiana</i>	3	0.10	0.7	--	--	--
<i>Menispermum canadense</i>	3	0.10	0.7	--	--	--
<i>Verbena urticifolia</i>	3	0.10	0.7	--	--	--
<i>Cornus drummondii</i>	3	0.02	0.4	--	--	--
<i>Dichanthelium boscii</i>	3	0.02	0.4	30	0.32	4.5
<i>Euphorbia corollata</i>	3	0.02	0.4	10	0.05	1.3
<i>Parthenium integrifolium</i>	3	0.02	0.4	--	--	--
<i>Rhus aromatica</i>	3	0.02	0.4	3	0.10	0.7
<i>Sassafras albidum</i>	3	0.02	0.4	--	--	--
<i>Solidago ulmifolia</i>	--	--	--	50	3.02	14.9
<i>Tridens flavus</i>	--	--	--	53	2.23	13.0
<i>Hypericum sphaerocarpum</i>	--	--	--	37	1.90	10.0
<i>Lespedeza capitata</i>	--	--	--	20	0.60	4.1
<i>Galium pilosum</i>	--	--	--	17	0.33	3.0
<i>Chasmanthium latifolium</i>	--	--	--	10	0.22	1.9
<i>Eragrostis spectabilis</i>	--	--	--	10	0.22	1.9
<i>Senecio platensis</i>	--	--	--	13	0.07	1.7
<i>Asplenium platyneuron</i>	--	--	--	10	0.13	1.6
<i>Ruellia strepens</i>	--	--	--	10	0.13	1.6
<i>Parthenocissus quinquefolia</i>	--	--	--	7	0.20	1.4
<i>Cercis canadensis</i>	--	--	--	3	0.10	0.7
<i>Desmodium paniculatum</i>	--	--	--	3	0.10	0.7
<i>Ulmus rubra</i>	--	--	--	3	0.10	0.7
<i>Aster pilosus</i>	--	--	--	3	0.02	0.4
<i>Galium circaezans</i>	--	--	--	3	0.02	0.4
<i>Geum canadense</i>	--	--	--	3	0.02	0.4
<i>Houstonia lanceolata</i>	--	--	--	3	0.02	0.4
<i>Penstemon pallidus</i>	--	--	--	3	0.02	0.4
Totals		38.02	200.0		33.47	200.0
Exposed rock		18.27			17.63	
Bare ground and litter		40.45			43.08	

Table 2. Frequency (%), mean cover (% of total area), relative frequency, relative cover, and importance value (IV) for the ground layer species encountered in the East Glade, Buettner Limestone Glade Communities, Monroe County, Illinois. (\*exotics)

Species	Freq. %	Mean Cover	Rel. Freq.	Rel. Cover	I. V.
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<i>Andropogon gerardii</i>	57	6.32	6.7	16.6	23.3
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<i>Chamacrista fasciculata</i>	50	1.08	5.9	2.9	8.8
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<i>Lespedeza virginica</i>	33	0.83	3.9	2.2	6.1
<i>Muhlenbergia sobolifera</i>	10	1.85	1.2	4.9	6.1
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<i>Liatris cylindracea</i>	17	0.17	2.0	0.4	2.4
<i>Rhus copallina</i>	7	0.60	0.8	1.6	2.4
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<i>Aster turbinellus</i>	10	0.30	1.2	0.8	2.0
<i>Dalea purpurea</i>	10	0.22	1.2	0.6	1.8
<i>Coreopsis palmata</i>	13	0.07	1.5	0.2	1.7
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<i>Poinsettia dentata</i>	13	0.07	1.5	0.2	1.7
<i>Eupatorium altissimum</i>	7	0.20	0.8	0.5	1.3
<i>Lespedeza violacea</i>	7	0.20	0.8	0.5	1.3
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<i>Aster oolentangiensis</i>	7	0.03	0.8	0.1	0.9
<i>Fraxinus americana</i>	7	0.03	0.8	0.1	0.9
<i>Aster ericoides</i>	3	0.10	0.4	0.3	0.7
<i>Dalea candida</i>	3	0.10	0.4	0.3	0.7
<i>Diospyros virginiana</i>	3	0.10	0.4	0.3	0.7
<i>Menispermum canadense</i>	3	0.10	0.4	0.3	0.7
<i>Verbena urticifolia</i>	3	0.10	0.4	0.3	0.7
<i>Cornus drummondii</i>	3	0.02	0.4	--	0.4
<i>Dichanthelium boscii</i>	3	0.02	0.4	--	0.4
<i>Euphorbia corollata</i>	3	0.02	0.4	--	0.4
<i>Parthenium integrifolium</i>	3	0.02	0.4	--	0.4
<i>Rhus aromatica</i>	3	0.02	0.4	--	0.4
<i>Sassafras albidum</i>	3	0.02	0.4	--	0.4
Totals		38.02	100.0	100.0	200.0
Exposed rock		18.27			
Bare ground and litter		40.45			

Table 3. Frequency (%), mean cover (% of total area), relative frequency, relative cover, and importance value (IV) for the ground layer species encountered in the West Glade, Buettner Limestone Glade Communities, Monroe County, Illinois. (\*exotics)

Species	Freq. %	Mean Cover	Rel. Freq.	Rel. Cover	I. V.
<i>Andropogon gerardii</i>	70	5.53	8.2	16.5	24.7
<i>Bouteloua curtipendula</i>	73	3.30	8.6	9.9	18.5
<i>Solidago ulmifolia</i>	50	3.02	5.9	9.0	14.9
<i>Aster oblongifolius</i>	23	3.85	2.7	11.5	14.2
<i>Tridens flavus</i>	53	2.23	6.3	6.7	13.0
<i>Schizachyrium scoparium</i>	43	1.70	5.1	5.1	10.2
<i>Hypericum sphaerocarpum</i>	37	1.90	4.3	5.7	10.0
<i>Aster patens</i>	40	1.52	4.6	4.5	9.1
<i>Chamacrista fasciculata</i>	37	0.85	4.3	2.6	6.9
<i>Croton monanthogynus</i>	40	0.62	4.6	1.9	6.5
<i>Lespedeza virginica</i>	23	0.93	2.7	2.9	5.6
<i>Brickellia eupatorioides</i>	23	0.93	2.7	2.8	5.5
<i>Liatris cylindracea</i>	30	0.57	3.5	1.7	5.2
<i>Dichantherium boscii</i>	30	0.32	3.5	1.0	4.5
<i>Lespedeza violacea</i>	10	1.10	1.2	3.3	4.5
<i>Solidago radula</i>	27	0.47	3.1	1.4	4.5
<i>Lespedeza capitata</i>	20	0.60	2.3	1.8	4.1
<i>Aster oolentangiensis</i>	17	0.50	2.0	1.5	3.5
<i>Coreopsis lanceolata</i>	17	0.33	2.0	1.0	3.0
<i>Galium pilosum</i>	17	0.33	2.0	1.0	3.0
<i>Eupatorium altissimum</i>	7	0.60	0.8	1.8	2.6
<i>Helianthus divaricatus</i>	13	0.23	1.5	0.7	2.2
<i>Muhlenbergia sobolifera</i>	13	0.23	1.5	0.7	2.2
<i>Chasmanthium latifolium</i>	10	0.22	1.2	0.7	1.9
<i>Eragrostis spectabilis</i>	10	0.22	1.2	0.7	1.9
<i>Acalypha gracilens</i>	13	0.07	1.5	0.2	1.7
<i>Senecio plattensis</i>	13	0.07	1.5	0.2	1.7
<i>Asplenium platyneuron</i>	10	0.13	1.2	0.4	1.6

<i>Ruellia strepens</i>	10	0.13	1.2	0.4	1.6
<i>Parthenocissus quinquefolia</i>	7	0.20	0.8	0.6	1.4
<i>Carex pensylvanica</i>	10	0.05	1.2	0.1	1.3
<i>Euphorbia corollata</i>	10	0.05	1.2	0.1	1.3
<i>Poinsettia dentata</i>	7	0.03	0.8	0.1	0.9
<i>Aster turbinellus</i>	3	0.10	0.4	0.3	0.7
<i>Cercis canadensis</i>	3	0.10	0.4	0.3	0.7
<i>Desmodium paniculatum</i>	3	0.10	0.4	0.3	0.7
<i>Rhus aromatica</i>	3	0.10	0.4	0.3	0.7
<i>Ulmus rubra</i>	3	0.10	0.4	0.3	0.7
<i>Aster pilosus</i>	3	0.02	0.4	--	0.4
<i>Dalea purpurea</i>	3	0.02	0.4	--	0.4
<i>Galium circaezans</i>	3	0.02	0.4	--	0.4
<i>Geum canadense</i>	3	0.02	0.4	--	0.4
<i>Houstonia lanceolata</i>	3	0.02	0.4	--	0.4
<i>Penstemon pallidus</i>	3	0.02	0.4	--	0.4
<i>Ruellia humilis</i>	3	0.02	0.4	--	0.4
Totals		33.47	100.0	100.0	200.0
Exposed rock		17.63			
Bare ground and litter		43.08			



