Chakravorty, J., J. Harrington, and E.M. Bach. 2024. Bison grazing in eastern tallgrass prairie does not alter plant diversity after five years. Natural Areas Journal 44(4).

**Supplemental Materials**

**Table S1:** Indicator plant species for each of the habitat types. These species are more likely to be observed in the habitats indicated than in other habitats.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Multilevel pattern analysis | |  |  |  |
| --------------------------- | |  |  |  |
|  |  |  |  |  |
| Association function: IndVal | |  |  |  |
| Significance level (alpha): 0.05 | |  |  |  |
|  |  |  |  |  |
| Total number of species: 315 | |  |  |  |
| Selected number of species: 121 | |  |  |  |
| Number of species associated to 1 group: 121 | |  |  |  |
| Number of species associated to 2 groups: 0 | |  |  |  |
| Number of species associated to 3 groups: 0 | |  |  |  |
|  |  |  |  |  |
| List of species associated to each combination: | |  |  |  |
|  |  |  |  |  |
| Group new #sps. 44 |  |  |  |  |
| **Genus** | **Species** | **stat** | **P.val** |  |
| Solidago | missouriensis | 0.852 | 0.005 | \*\* |
| Eryngium | yuccifolium | 0.847 | 0.005 | \*\* |
| Drymocallis | arguta | 0.816 | 0.005 | \*\* |
| Elymus | canadensis | 0.802 | 0.005 | \*\* |
| Liatris | pycnostachya | 0.791 | 0.005 | \*\* |
| Pycnanthemum | tenuifolium | 0.791 | 0.005 | \*\* |
| Zizia | aurea | 0.776 | 0.005 | \*\* |
| Penstemon | digitalis | 0.746 | 0.005 | \*\* |
| Silphium | laciniatum | 0.736 | 0.005 | \*\* |
| Parthenium | integrifolium | 0.713 | 0.005 | \*\* |
| Symphyotrichum | ericoides | 0.711 | 0.005 | \*\* |
| Baptisia | lactea | 0.71 | 0.005 | \*\* |
| Astragalus | canadensis | 0.707 | 0.005 | \*\* |
| Coreopsis | palmata | 0.703 | 0.005 | \*\* |
| Silphium | integrifolium | 0.702 | 0.005 | \*\* |
| Solidago | speciosa | 0.693 | 0.005 | \*\* |
| Symphyotrichum | oolentangiense | 0.668 | 0.005 | \*\* |
| Coreopsis | tripteris | 0.622 | 0.005 | \*\* |
| Brickellia | eupatorioides | 0.618 | 0.005 | \*\* |
| Koeleria | macrantha | 0.6 | 0.005 | \*\* |
| Echinacea | pallida | 0.593 | 0.005 | \*\* |
| Symphyotrichum | laeve | 0.591 | 0.005 | \*\* |
| Oligoneuron | rigidum | 0.588 | 0.01 | \*\* |
| Solidago | canadensis | 0.575 | 0.01 | \*\* |
| Symphyotrichum | sericeum | 0.573 | 0.005 | \*\* |
| Euthamia | gymnospermoides | 0.572 | 0.005 | \*\* |
| Helianthus | pauciflorus | 0.545 | 0.005 | \*\* |
| Silphium | terebinthinaceum | 0.54 | 0.005 | \*\* |
| Rudbeckia | hirta | 0.535 | 0.005 | \*\* |
| Trifolium | repens | 0.482 | 0.02 | \* |
| Ionactis | linariifolia | 0.471 | 0.005 | \*\* |
| Verbena | stricta | 0.463 | 0.01 | \*\* |
| Allium | cernuum | 0.463 | 0.005 | \*\* |
| Desmodium | illinoense | 0.454 | 0.015 | \* |
| Symphyotrichum | pilosum | 0.446 | 0.04 | \* |
| Arnoglossum | atriplicifolium | 0.431 | 0.005 | \*\* |
| Bromus | inermis | 0.423 | 0.015 | \* |
| Desmodium | canadense | 0.408 | 0.005 | \*\* |
| Cirsium | discolor | 0.395 | 0.03 | \* |
| Pycnanthemum | virginianum | 0.394 | 0.04 | \* |
| Veronicastrum | virginicum | 0.392 | 0.005 | \*\* |
| Juncus | tenuis | 0.354 | 0.015 | \* |
| Liatris | pyconstachya | 0.354 | 0.02 | \* |
| Cirsium | arvense | 0.289 | 0.05 | \* |
|  |  |  |  |  |
| Group old #sps. 9 |  |  |  |  |
| **Genus** | **species** | **stat** | **P.value** |  |
| Ratibida | pinnata | 0.748 | 0.005 | \*\* |
| Andropogon | gerardii | 0.718 | 0.005 | \*\* |
| Packera | plattensis | 0.677 | 0.005 | \*\* |
| Trifolium | pratense | 0.657 | 0.005 | \*\* |
| Sorghastrum | nutans | 0.625 | 0.05 | \* |
| Solidago | nemoralis | 0.55 | 0.025 | \* |
| Dalea | candida | 0.511 | 0.005 | \*\* |
| Trifolium | hybridum | 0.479 | 0.005 | \*\* |
| Heliopsis | helianthoides | 0.429 | 0.005 | \*\* |
|  |  |  |  |  |
| Group remnant #sps. 26 | |  |  |  |
| **Genus** | **species** | **stat** | **P.value** |  |
| Dichanthelium | implicatum | 0.818 | 0.005 | \*\* |
| Schizachyrium | scoparium | 0.698 | 0.005 | \*\* |
| Dichanthelium | oligosanthes | 0.684 | 0.005 | \*\* |
| Liatris | aspera | 0.68 | 0.005 | \*\* |
| Euphorbia | corollata | 0.626 | 0.005 | \*\* |
| Hieracium | longipilum | 0.614 | 0.005 | \*\* |
| Amorpha | canescens | 0.614 | 0.005 | \*\* |
| Carex | spp | 0.611 | 0.02 | \* |
| Sisyrinchium | albidum | 0.603 | 0.005 | \*\* |
| Hesperostipa | spartea | 0.569 | 0.005 | \*\* |
| Asclepias | verticillata | 0.56 | 0.005 | \*\* |
| Leptoloma | cognata | 0.53 | 0.005 | \*\* |
| Sporobolus | heterolepis | 0.525 | 0.01 | \*\* |
| Baptisia | leucophaea | 0.519 | 0.005 | \*\* |
| Bouteloua | curtipendula | 0.503 | 0.01 | \*\* |
| Symphyotrichum | oblongifolium | 0.443 | 0.02 | \* |
| Liatris | cylindracea | 0.408 | 0.01 | \*\* |
| Minuartia | michauxii | 0.408 | 0.005 | \*\* |
| Heuchera | richardsonii | 0.401 | 0.01 | \*\* |
| Polygala | polygama | 0.373 | 0.005 | \*\* |
| Viola | pedatifida | 0.373 | 0.01 | \*\* |
| Linum | sulcatum | 0.34 | 0.045 | \* |
| Artemisia | campestris | 0.333 | 0.03 | \* |
| Melilotus | officinalis | 0.333 | 0.04 | \* |
| Oxalis | violacea | 0.333 | 0.02 | \* |
| Polygala | sanguinea | 0.333 | 0.045 | \* |
|  |  |  |  |  |
| Group savanna #sps. 42 | |  |  |  |
| **Genus** | **species** | **stat** | **P.value** |  |
| Quercus | velutina | 0.882 | 0.005 | \*\* |
| Prunus | serotina | 0.832 | 0.005 | \*\* |
| Quercus | macrocarpa | 0.816 | 0.005 | \*\* |
| Rubus | allegheniensis | 0.782 | 0.005 | \*\* |
| Parthenocissus | quinquefolia | 0.745 | 0.005 | \*\* |
| Ageratina | altissima | 0.707 | 0.005 | \*\* |
| Comandra | umbellata | 0.684 | 0.005 | \*\* |
| Smilacina | racemosa | 0.667 | 0.005 | \*\* |
| Potentilla | simplex | 0.654 | 0.005 | \*\* |
| Daucus | carota | 0.624 | 0.005 | \*\* |
| Scutellaria | parvula | 0.598 | 0.005 | \*\* |
| Cornus | racemosa | 0.579 | 0.005 | \*\* |
| Rubus | occidentalis | 0.577 | 0.005 | \*\* |
| Rubus | flagellaris | 0.539 | 0.005 | \*\* |
| Circaea | canadensis | 0.527 | 0.005 | \*\* |
| Verbesina | alternifolia | 0.527 | 0.01 | \*\* |
| Toxicodendron | radicans | 0.519 | 0.01 | \*\* |
| Oxalis | stricta | 0.512 | 0.005 | \*\* |
| Elymus | virginicus | 0.485 | 0.005 | \*\* |
| Agastache | scrophulariaefolia | 0.471 | 0.01 | \*\* |
| Geum | canadense | 0.471 | 0.01 | \*\* |
| Liparis | liliifolia | 0.471 | 0.005 | \*\* |
| Rumex | acetosella | 0.428 | 0.045 | \* |
| Argemone | albiflora | 0.408 | 0.005 | \*\* |
| Celtis | occidentalis | 0.408 | 0.015 | \* |
| Hackelia | virginiana | 0.408 | 0.015 | \* |
| Rosa | carolina | 0.408 | 0.01 | \*\* |
| Polygala | polygama | 0.378 | 0.025 | \* |
| Vitis | vulpina | 0.365 | 0.02 | \* |
| Anemone | quinquefolia | 0.333 | 0.015 | \* |
| Asarum | canadense | 0.333 | 0.015 | \* |
| Campanulastrum | americanum | 0.333 | 0.025 | \* |
| Hystrix | patula | 0.333 | 0.015 | \* |
| Morus | alba | 0.333 | 0.025 | \* |
| Phryma | leptostachya | 0.333 | 0.02 | \* |
| Rosa | multiflora | 0.333 | 0.045 | \* |
| Rubus | pensilvanicus | 0.333 | 0.025 | \* |
| Silene | latifolia | 0.333 | 0.015 | \* |
| Silene | vulgaris | 0.333 | 0.045 | \* |
| Solidago | riddellii | 0.333 | 0.025 | \* |
| Ulmus | americana | 0.333 | 0.03 | \* |
| Dactylis | glomerata | 0.322 | 0.045 | \* |
| --- |  |  |  |  |
| Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1 | |  |  |  |
|  |  |  |  |  |
| > |  |  |  |  |
|  |  |  |  |  |



**Figure S1:** Plot layout for each paired fenced/unfenced exclosure plot. Each plot contains three parallel transects (12.5 m long) with five 0.25m2 quadrats in which plant community composition and cover is estimated.



**Figure S2:** Grazed plots had greater grass:forb ratio than ungrazed plots (*P* = 0.004). This was true in each sampling year, including baseline measurements prior to bison reintroduction (year 0).



**Figure S3:** Plant community composition changed across the five years of sampling, independent of grazing disturbance (*P* = 0.031, *R*2 = 0.020).