

Supplementary material

Appendix A List of plant species classified into different life forms in six grassland communities of the Xilin River Basin, Inner Mongolia, China. “Ungrazed” and “grazed” denote plant species collected only in the ungrazed and grazed sites, respectively, and “common” means the same species shared at both the ungrazed and grazed sites. AB, annuals and biennials; PF, perennial forbs; PG, perennial grasses; SS, shrubs and semi-shrubs.

Appendix B

Table A1. Principal components analysis (PCA) of species-trait correlation matrix.

All variables were log10-transformed before analysis. Eigenvectors $>|0.40|$ are highlighted in bold. Percents reflect the percent of total variance (i.e. the sum of the diagonal elements in the correlation matrix) accounted for by each principal component.

	PC1	PC2	PC3
Eigenvalues	3.91	1.71	1.22
% of Variance	43.43	19.03	13.50
Cumulative % variance	43.43	62.46	75.96
Eigenvectors			
Plant height (PH)	0.211	0.420	-0.419
Plant individual biomass (PB)	0.497	0.004	-0.018
Stem-leaf biomass ratio (SLR)	0.067	0.661	-0.024
Stem biomass (SB)	0.466	0.198	0.005
Leaf biomass (LB)	0.472	-0.217	-0.009
Total leaf area (TLA)	0.432	-0.084	0.044
Leaf density (LD)	0.269	-0.192	0.494
Specific leaf area (SLA)	-0.052	0.424	0.199
Leaf N content (LNC)	-0.056	0.277	0.733

Table A2. Comparisons of plant functional traits among three life forms. AB, annuals and biennials; PF, perennial forbs; PG, perennial grasses; SLR, stem-leaf biomass ratio; SLA, specific leaf area. *P* values following one-way ANOVAs indicate differences in functional traits among three life-form groups. Different lowercases represent significant differences among life-forms (LSD multiple-range tests, $P<0.05$). The sample sizes are 20, 90 and 26 for AB, PF and PG, respectively.

Life forms	Plant height (cm)	Individual biomass (g)	SLR ($\text{g} \cdot \text{g}^{-1}$)	SLA ($\text{cm}^2 \cdot \text{g}^{-1}$)	Leaf N content (%)	Palatability index
AB	36.47ab	3.64	2.67a	154.78a	2.98a	0.3750c
PF	28.47b	2.45	0.91b	141.16ab	2.32b	0.5361b
PG	47.20a	4.32	2.51a	126.45b	2.33b	0.9615a
<i>P</i> value	<0.0001	NS	<0.0001	0.0745	0.0005	<0.0001

Appendix C

Figure A1. CCA ordination diagram quantifying relationships between the distributions of plant communities (a) and life forms (b) and environmental variables. The two orthogonal axes explain respectively 89.8% (CCA 1) and 10.2 % (CCA 2) of the variance. Vectors represent two environmental variables, i.e. soil moisture and grazing. UG1 to UG6 and G1 to G6 represent six ungrazed and grazed plant communities, respectively. Error bars indicate the standard errors of biplot scores for each community along the axes 1 and 2. **Abbreviations:** AB, annuals and biennials; PF, perennial forbs; PG, perennial grasses; SS, shrubs and semi-shrubs.

Figure A2. Change in species dissimilarity along the soil moisture gradient.

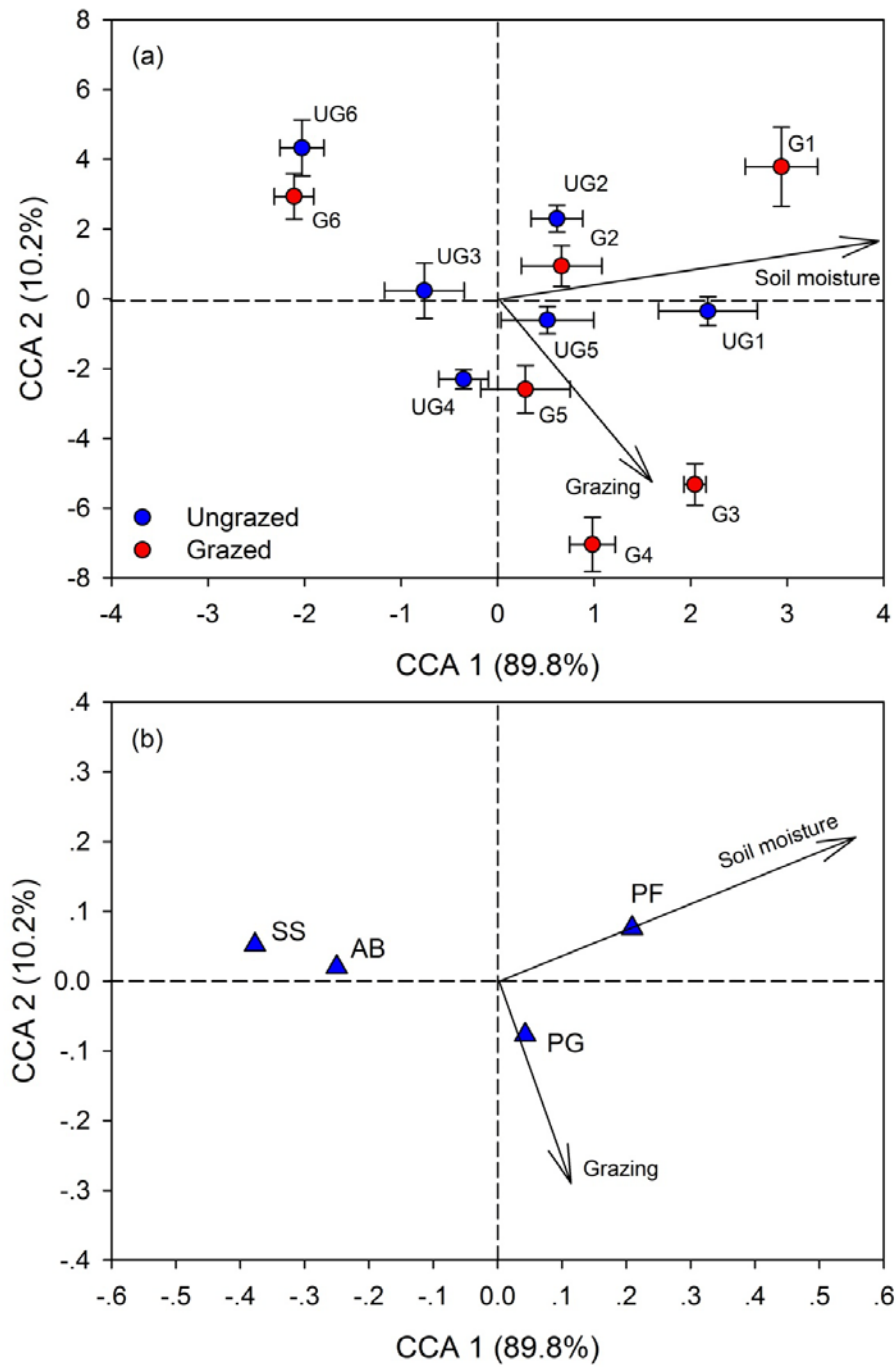


Figure A1

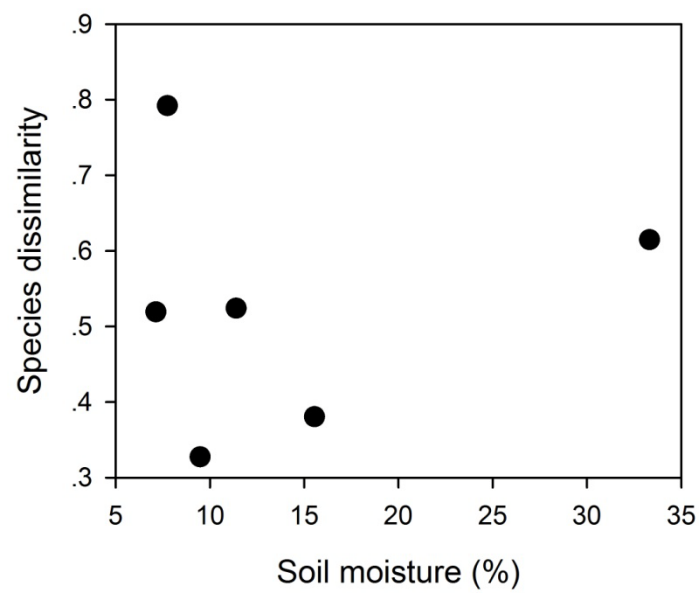


Figure A2