Pakistan J. Zool., vol. 53(6), pp 2389-2398, 2021 DOI: https://dx.doi.org/10.17582/journal.pjz/20190608100630

Supplementary Material

Diversity of Carabid Beetles (Coleoptera: Carabidae) under Three Grassland Management Regimes in Northwestern China

Hui Wang[1,2], Yuchen Zhao[1] and Xinpu Wang[1,*]

[1]*School of Agriculture, Ningxia University, Yinchuan, 750021, China*

[2]*Institute of Green Manure, Yan'an Academy of Agricultural Sciences, Yan'an, 716000, China*

Supplementary Table I. Univariate statistics by ANOVA for soil moisture (SM), soil bulk density (SBD), soil temperature (Temp), soil organic matter (C), total phosphorus (P), total nitrogen (N), and pH value (pH) between three management regimes: TE=typical enclosure, EM=enclosed with mowing, and FP=farmer grazing practice.

Soil variables	SM	SBD	Temp	C	P	N	pH
TE-area	16.37±2.01^{a}	1.15±0.07^{b}	17.24±0.95^{b}	36.72±0.73^{a}	19.81±2.89^{a}	2.39±0.3^{a}	8.01±0.02^{c}
EM-area	13.49±1.53^{b}	1.09±0.03^{c}	18.27±1.11^{a}	34.99±2.25^{b}	19.55±0.85^{a}	1.33±0.43^{b}	8.21±0.13^{b}
FP-area	12.29±1.85^{b}	1.2±0.06^{a}	18.2±0.54^{a}	17.71±1.59^{c}	14.9±1.64^{b}	1.37±0.18^{b}	8.33±0.04^{a}
F-value	20.15***	17.17***	6.22**	614.87***	29.24***	52.31***	64.69***

Means (±standard error) with different letters in each variable indicate significant differences among management regimes according to the Tukey test ($^{***}P < 0.001$, $^{**}P < 0.01$).

Supplementary Table II. Univariate statistics by ANOVA for plant biomass (PB), plant height (PH), plant density (PD), plant coverage (PC), plant species diversity (PSD), and aboveground litter (Litter) between three management regimes: TE=typical enclosure, EM=enclosed with mowing, and FP=farmer grazing practice.

Vegetation variables	PB	PH	PD	PC	PSD	Litter
TE-area	122.98±9.04^{a}	55.52±9.82^{a}	82.21±6.26^{b}	78.29±5.21^{a}	4.76±1.25^{b}	107.7±19.49^{a}
EM-area	92.97±8.37^{c}	37.43±7.88^{b}	110.49±9.99^{a}	55.12±5.7^{b}	6.31±0.83^{a}	45.27±7.59^{b}
FP-area	105.08±8.42^{b}	33.26±6.88^{b}	63.31±7.37^{c}	45.1±4.39^{c}	5.7±0.35^{a}	48.76±4.19^{b}
F-value	46.07***	30.62***	131.27***	165.41***	11.74***	121.66***

Means (±standard error) with different letters in each variable indicate significant differences among management regimes according to the Tukey test ($^{***}P < 0.001$, $^{**}P < 0.01$).

The different management regimes of TE, EM, and FP resulted in significant changes in soil and vegetation variables (Table S1 and Table S2). Analysis of soil variables indicated that SBD and pH were significantly higher in FP than in TE and EM, respectively. Temp and SM in FP were similar to those in EM regimes, of which Temp was significantly higher than for TE while SM was significantly lower than for TE; C and P were significantly lower in FP than in TE and EM, respectively, and N in FP was only significantly lower than for TE (Table S1). Analysis of vegetation variables indicated that all vegetation factors in TE were significantly higher than in EM and FP except for PD and PSD. There were no significant differences in PH, PSD, and Litter between in EM and in FP (Table S2).

* Corresponding author: wangxinpu@nxu.edu.cn

0030-9923/2021/0006-2389 $ 9.00/0