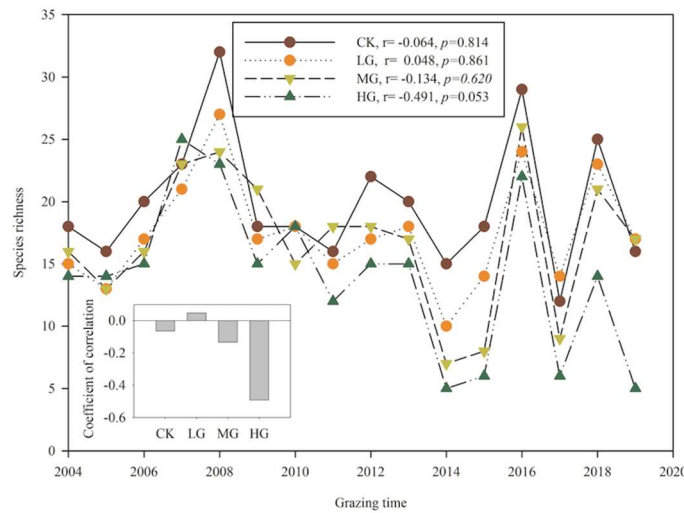
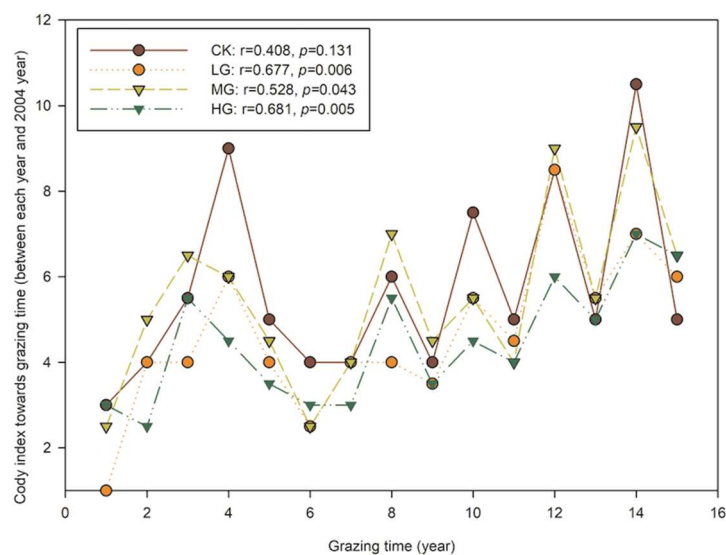


## Supplementary figures:

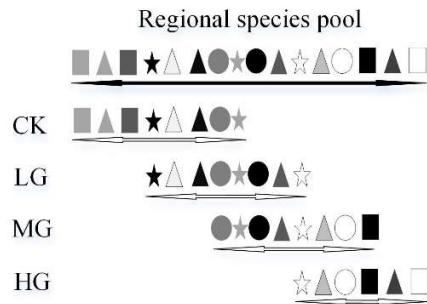


**Figure S1** Species richness decreased along grazing time. There were no significant but meaningful trend in species richness throughout the grazing time, as shown by the highest CV of the correlation bar in the largest intensity area of grazing (HG) ( $r = -0.491$ ,  $p=0.053$ ) and the only positive correlation at lightly grazing (LG) ( $r = 0.048$ ) but negative in others ( $r = -0.064$  in the control area and  $r = 0.134$  in moderately grazing area, respectively). Control (CK), lightly grazing (LG), moderate grazing (MG), and heavily grazing (HG)

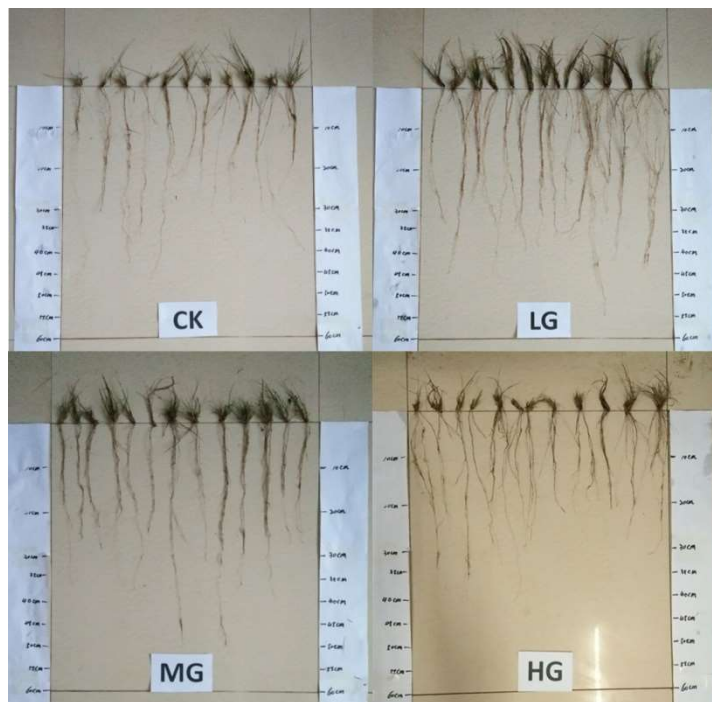


**Figure S2** The trend in Cody index for pairs of years (first year and following each year) along with time, revealed the considerable species turnover of community species composition along the grazing time (Bai *et al.* 2000; Escobar, Lobo & Halffter 2006; Sang & Bai 2008), and this trend was

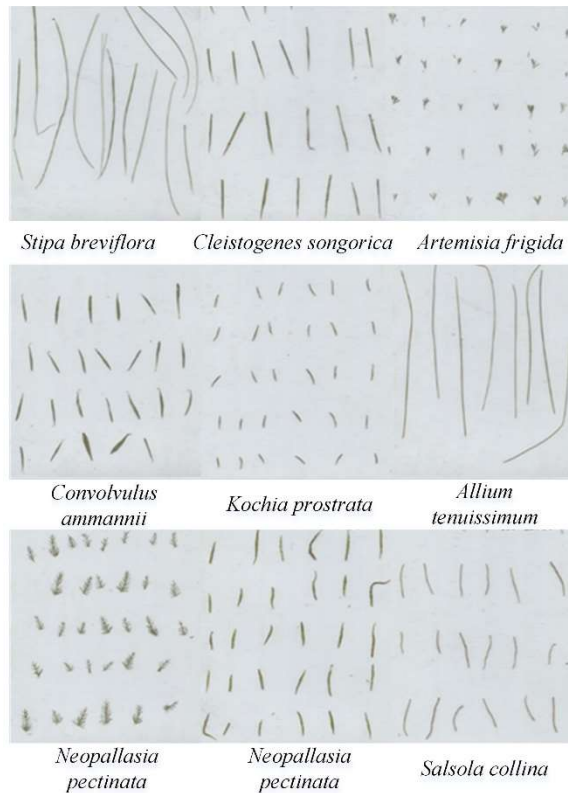
accelerated by intensity of grazing. Control (CK), lightly grazing (LG), moderate grazing (MG), and heavily grazing (HG)



**Figure S3** The illustration of species composition in the communities in different intensity of grazing, the change in species within different grazing areas area not simply a reduction in the number of species, but the original species in the community are constantly replaced by new species as the results of trait filtering and competition.



**Figure S4** The root depth of constructive species *Stipa breviflora* in area of four different grazing intensities. Control (CK), lightly grazing (LG), moderate grazing (MG), and heavily grazing (HG)



**Figure S5** This figure shows the leaves of several common plants in the experimental site of desert steppe. The slender leaves of *Stipa breviflora* belong to the leaves with large leaf area in this region.

## References

- Bai, Y., Xing, X., Xu, Z. & Li, D. (2000) Beta-diversity of *Stipa* communities in Inner Mongolia Plateau. *Ying yong sheng tai xue bao = The journal of applied ecology / Zhongguo sheng tai xue xue hui, Zhongguo ke xue yuan Shenyang ying yong sheng tai yan jiu suo zhu ban*, **11**, 408-412.
- Escobar, F., Lobo, J.M. & Halffter, G. (2006) Assessing the origin of Neotropical mountain dung beetle assemblages (Scarabaeidae: Scarabaeinae): the comparative influence of vertical and horizontal colonization. *Journal of Biogeography*, **33**, 1793–1803.
- Sang, W. & Bai, F. (2008) Vascular diversity patterns of forest ecosystem before and after a 43-year interval under changing climate conditions in the Changbaishan Nature Reserve, northeastern China. *Plant Ecology*, **201**, 115-130.