

# The role of grazing exclusion by fence in regulating vegetation characteristics and plant diversity in Mongolian rangelands



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## Introduction

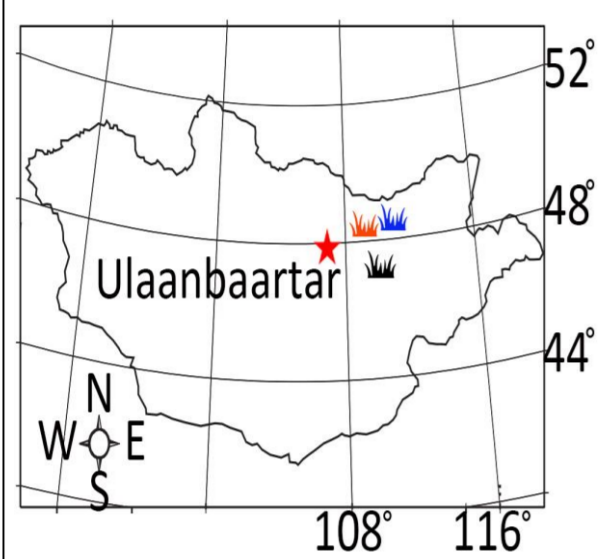
Grazing largely affects vegetation dynamic of grassland communities. An intensified grazing will likely lead to grassland degradation. Therefore, to restore degraded grasslands, grazing exclusion by fence might be very helpful. However, the direction and the strength of fencing effects on vegetation characteristics and plant diversity are currently disputable. In addition, vegetation cover and species richness were often independently examined in rangelands, their relationship is not well detected.

I performed a fencing experiment in three grassland types of Mongolia. Each of three grasslands was set by two treatments: grazing exclusion by fence and freely grazing. Vegetation characteristics were mirrored by vegetation cover and height. Plant diversity was measured by the index of species richness.

This study fills the knowledge gap of grazing management effects in Mongolian rangelands, and will project the impact of changes in land use on ecosystem functioning.

## Methodology

### Location



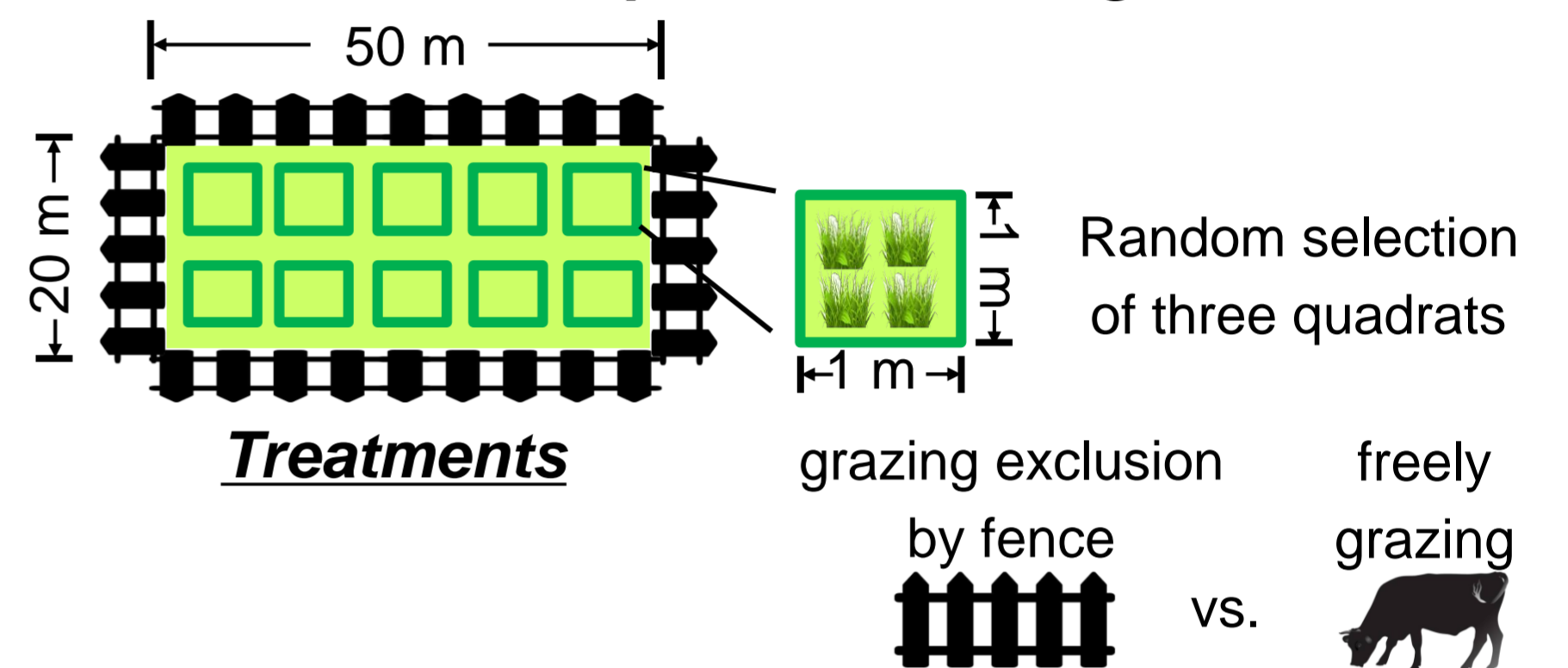
	Dry steppe	Mountain steppe	Meadow
MAP (mm)	258.4	287.5	287.5
MAT (°C)	-2.6	-1.8	-2.6
Grazing intensity (LSU)	11	7	7

LSU: large stock unit per 100 ha, one large stock unit can be deemed as one cow

### Grassland types



### Experimental design



### Experimental period

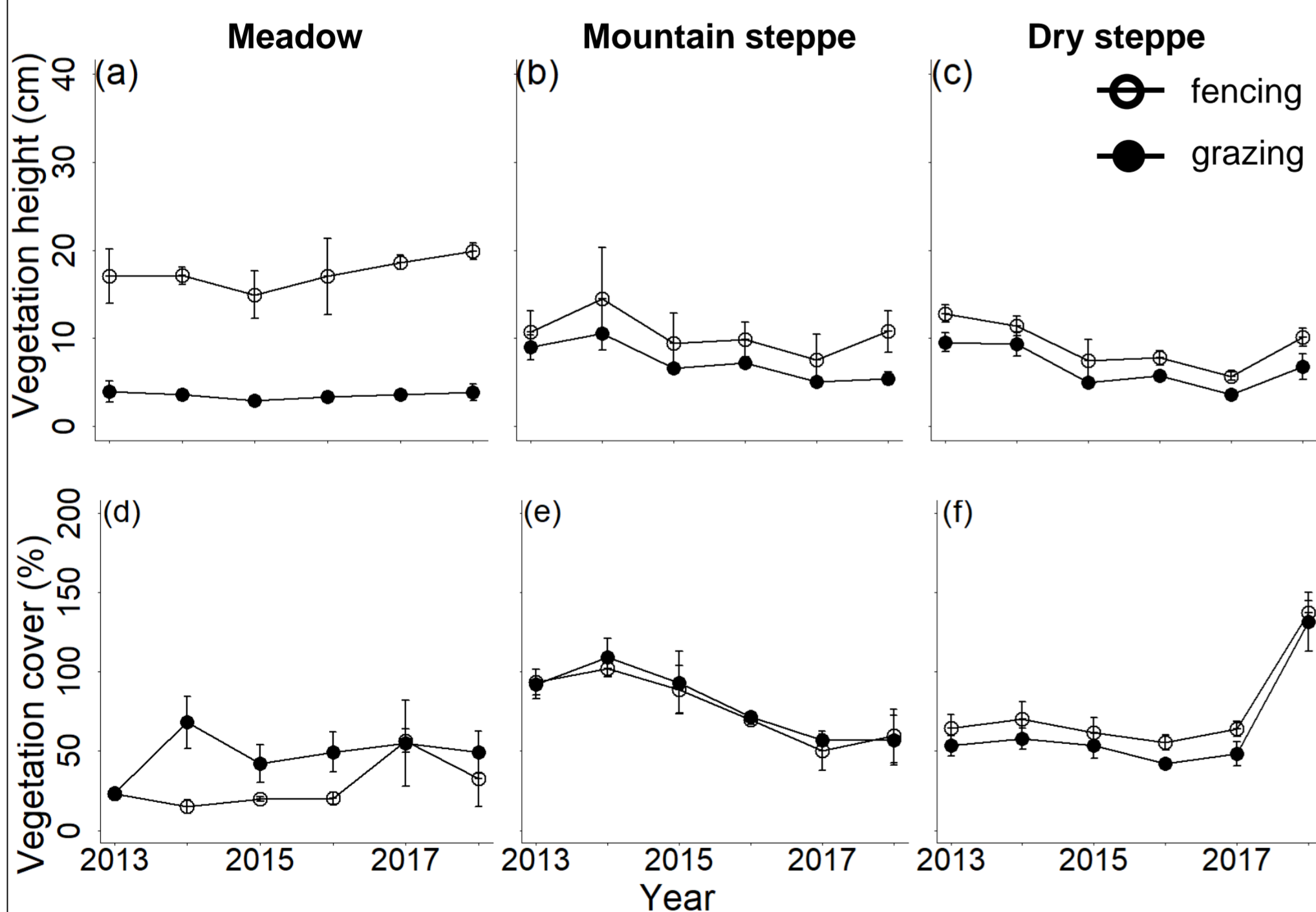
2013 - 2018 every year

### Indices measured

vegetation height and cover  
species richness

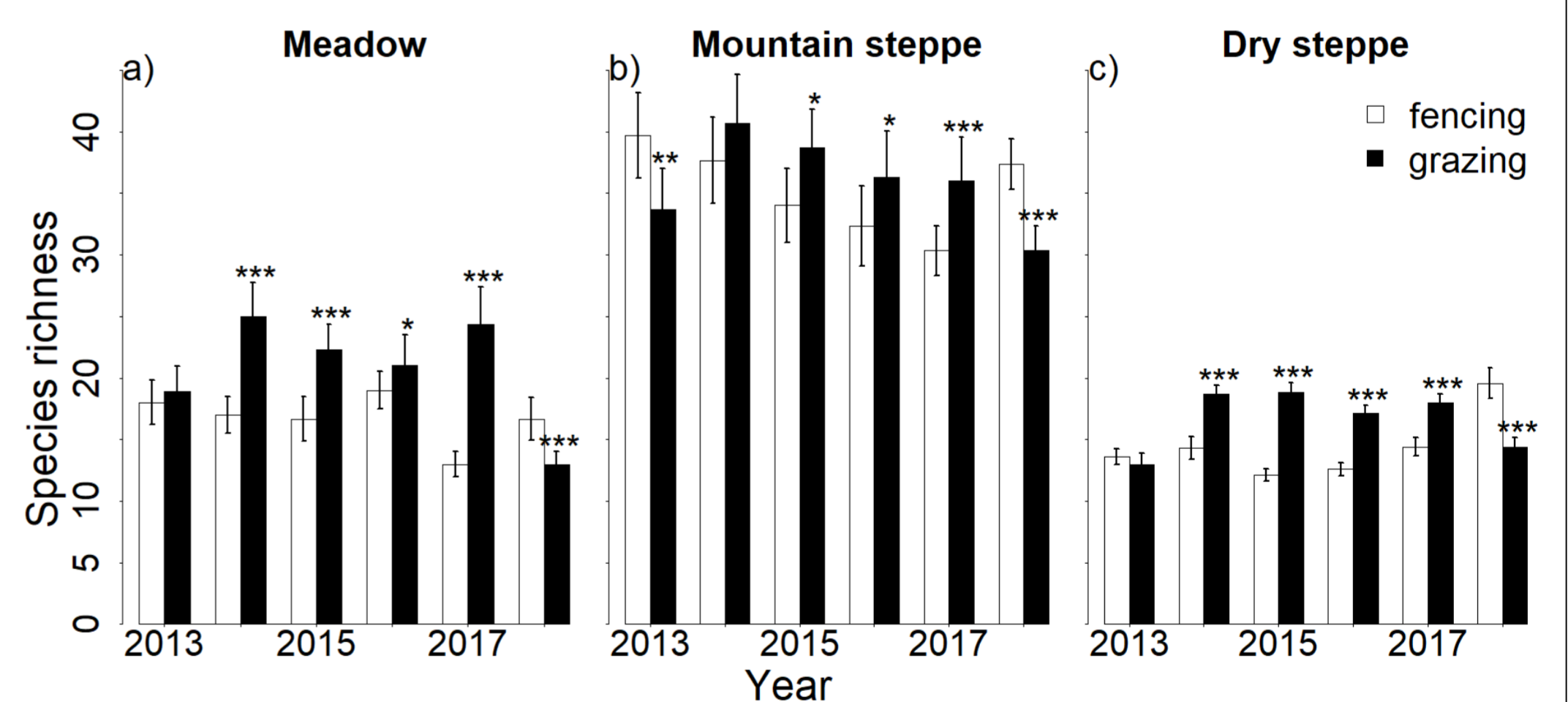
## Results

### Vegetation Characteristics

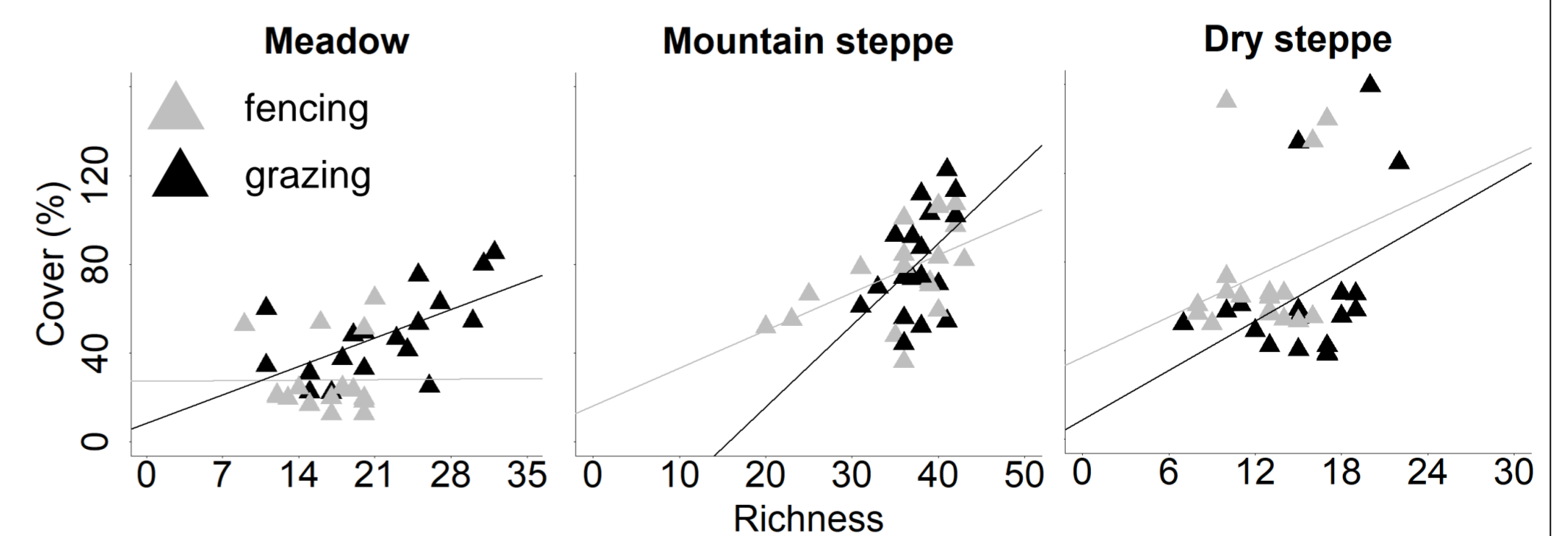


- Fencing significantly increases vegetation height, however only has a positive effect on vegetation cover in the dry steppe.
- Fencing generally decreases species richness.
- Inter-annual variations are low for grazing exclusion effects on vegetation characteristics and plant diversity.

### Plant Diversity



### Richness-Cover Relationship

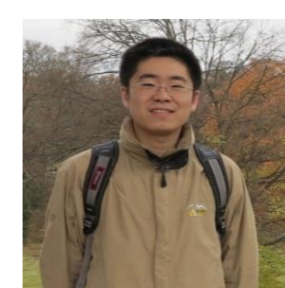


- A higher plant species richness often leads to a greater vegetation cover. Differences of the effect between fencing and grazing treatments are dependent on grassland types

## Conclusions

- Grazing exclusion by fence is not efficient in restoring vegetation cover and species richness in Mongolian rangelands
- Species richness generally increases vegetation cover independent of treatments and grassland types.

## Contact



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