

Fencing effects on biodiversity changes in desertified grassland in Hulunbeir ,China

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Introduction Hulunbeir grassland is the best grassland in China ,but since the last 20 years , the grassland desertified in a large area . Fencing as a major grassland rehabilitation and reconstruction measures have been widely adopted in the world .

Materials and methods Located in Wangong Town , which belongs to Chenbaerhu Banner , Hulunbeir City of Inner Mongolia , the experiment sites were selected . Samples were collected in desertified grasslands of fenced 1 year , 4 years , 7 years , 11 years and 17 years , respectively . Plant community and biodiversity were measured .

Results The coverage of vegetation , the height of herbaceous layer , and the density and biomass (including aboveground biomass and belowground biomass in the depth of 30cm) , showed a significant linear regression (Table 1) . Species richness and species diversity is improved drastically , the species richness index is fit with the dualistic function($r=0.9919$, $p<0.01$) (Figure 1) .

Table 1 Regression relationships between community structure and fencing time .

Items	Regression models	R ²	R	P
Coverage (Y _C)	$Y_C = 0.0015X^3 - 0.1034X^2 + 2.9622X + 4.3182$	0.7697	0.8773	<0.01
Height (Y _H)	$Y_H = 8.1871 \ln(X) + 15.621$	0.9626	0.9811	<0.01
Density (Y _D)	$Y_D = 18.534 e^{0.837X}$	0.9392	0.9691	<0.01
Biomass (Y _B)	$Y_B = 29.217X^3 - 284.37X^2 + 830.21X - 539.41$	0.9751	0.9875	<0.01
Root weight (Y _R)	$Y_R = 13.925X^3 - 163.05X^2 + 617.93X - 431.64$	0.9904	0.951	<0.01

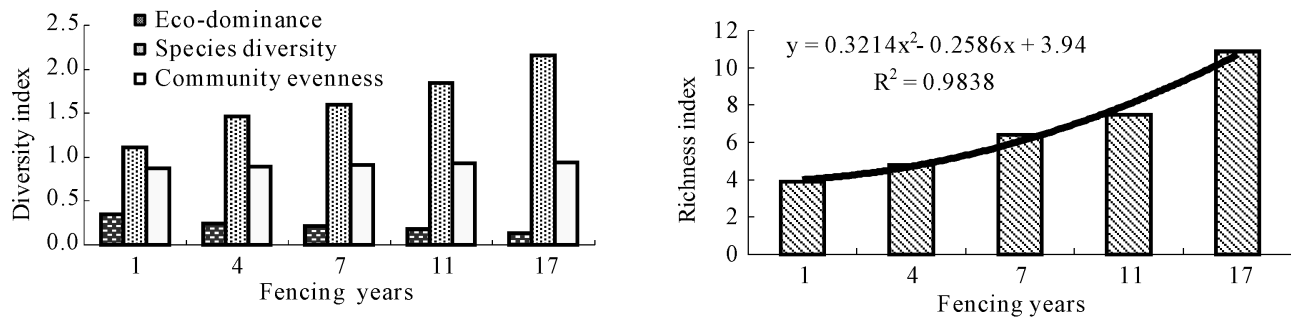


Figure 1 Changes of richness , dominance , biodiversity and evenness of community species in different years after enclosing .

Conclusions Fencing changed the desertified grassland community composition .The species richness increased continually , the structure of community improved . Species biodiversity and community evenness has been escalated .

References

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