Research on Community Dominance and Functional Groups after Sandy Land Enclosed

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Introduction Functional groups are usally considered species which have a direct connection with system's function, and the species among functional groups have same effect on system which have a well comparability Therefore, it is a worthy of affirmitive thing that we use functional groups as species diversity index to reseach the relation between species diversity and ecosystem function. (Li Qiu-Nian, 2004) The compartmentalization of functional groups can asertain every species acting character and magnitude in functional groups, which administer to making certain every species' opposite contribution to ecosystem. (Wang Zheng-Wen, Long Rui Jun, 2004)[2] We reseach community functional groups after sandy land enclosed, there is a important significans to making sure ecosystem natural succession and ecological restoration processes.

Natural situation The test spot (Na-Mu-Si-Lai Nature Reserve) lies on northeast Zhang Wu county Liao Ning province, and it situated on south of Horqin sandy land. The test spot was enclosed in 1997. This region is temperate zone monsoon continental climate, and the four seasons change distinct, it belongs to half drought region. The mean annual temperature is 7.1℃, mean annual precipitation is 510.2mm and soil type is aeolian sandy soil.

Materials and metheods All kinds of plant populations' density, coverage, height, frequency and aboveground biomass were mensurated by random quadrat in July, 2006. The quadrat area was one square meter. All items were mensurated ten times. Every kind of population's dominance was mensurated by calculate and compartmentalizd functional groups of life form.

Results The diominance calculational result indicated that the SDR of *Cleistogenes squarrosa* was the maximum among all kinds of populations (Table 1). The perennia grasses, such as *Lespedeza bicolor* Turcz., *Koeleria cristata* (L.) Pers. and *Agropyron mongolicum* Keng also occupied important status. The SDR of annual *Salsola collina* put into second status. This shown that perennial bunch grasses became the dominating population in community by nine years enclosure, the result also suggested that the ecologic quality of grassland has been improved a lot. The functional groups result suggested that perennial bunch grasses took on the most aboveground biomass (97.95 g/m^2) (Table 2) among all functional groups, and this functional group was preponderant group. Undershurbs and subshrubs were one of the main functional groups on ecological restoration and windbreak and sand-fixation, the proportion reached 14.71 percent. There were quite a bit species and quantity of annuals and biennials in community. Moreover, the perennial rhizome grasses had the minimal contribution.

Table 1 *Community dominance.*

Species	SDR	Species	SDR
Cleistogenes squarrosa	21.85	*Delphinium grandiflorum*	5.58
Salsola collina	14.49	*Artemisiasievrsiana* Willd	4.82
Lespedeza bicolor Turcz.	14.46	*Melissitus ruthenica*	5.00
Koeleria cristata (L.) Pers.	12.69	*Dianthus chinensis*	5.10
Agropyron mongolicum Keng	10.10	*Chenopodium aristatum*	4.47
Agropyron cristatum	9.60	*Thalictrum squarrosum* Steph.	0.20
Allium senescens L.	9.30	*Hemistepta lyrata* Bunge	0.10
Ch. acuminatum Willd	9.11	*Koeleria cristata*	0.10
Artemisia capillaries Thunb.	8.68	*Leymus chinensis*	0.10
Herba Potentillae Chinensis	7.54	*B. chinensis*	0.10
P. tenuifolia Willd.	6.27		

Table 2 *Functional group compositions of the life forms.*

Community functional groups	Aboveground biomas (g/m^2)
undershurbs and subshrubs	26.79
perennial bunch grasses	97.95
perennial rhizome grasses	8.86
perennial forbs	14.00
annuals and biennials	34.46

Result Perennial grasses took out a dominant status, but there were large numbers of forbs after nine years enclosure. Sandy land enclosure can redound to ecological restoration. Perennial bunch grasses became the leading functional group.

Reference

Li Qiu Nian, 2004. Preliminary analysis on characteristics of degraded grassland community and species diversity in alpine meadow ecosystem. [J] *Qing Hai Environment*, 14(1): 30-33.