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Pasture condition of dry steppe in Mongolia

/ Case study of Altanbulag soum, Tov province, Mongolia /

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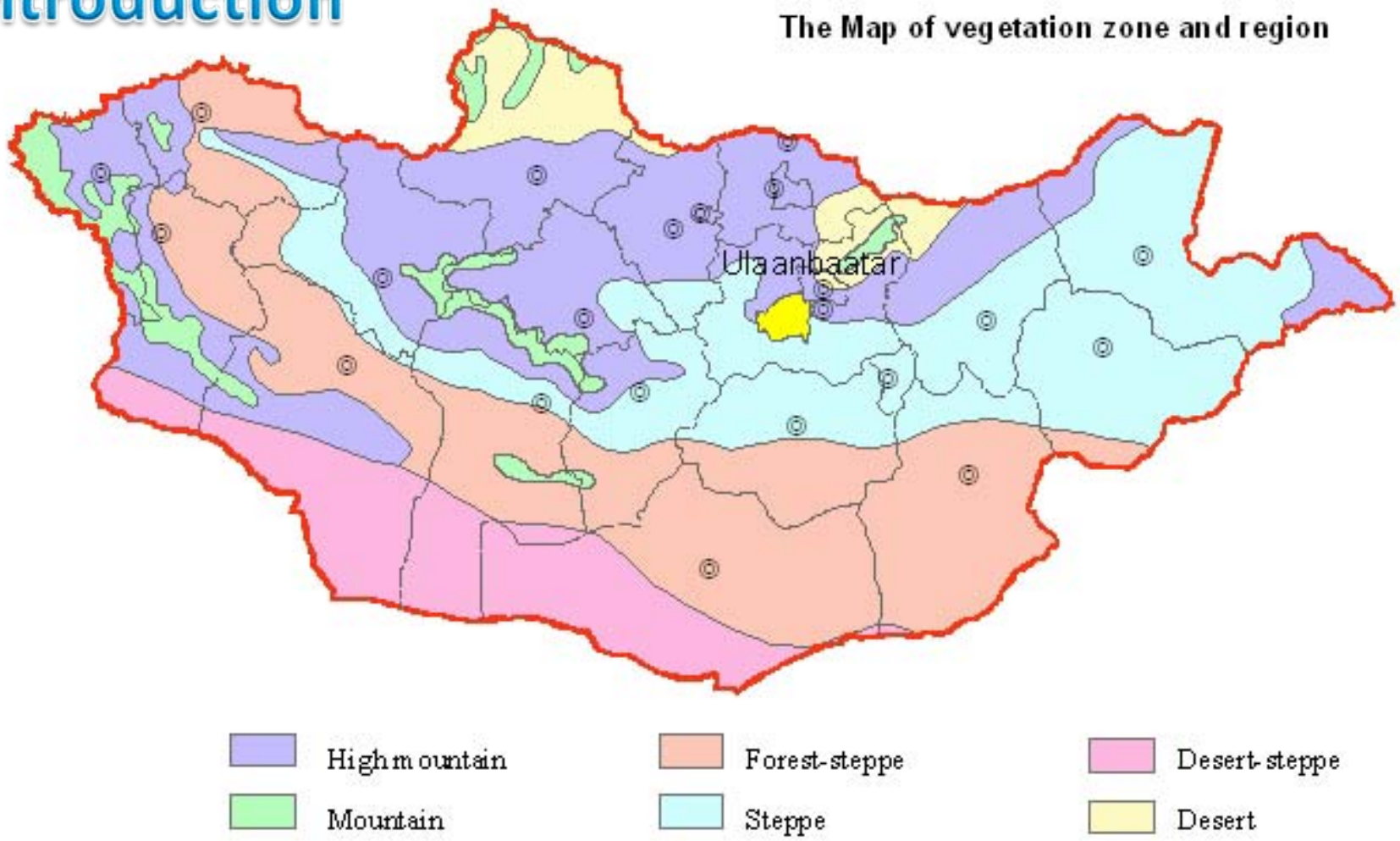
Introduction



The steppe vegetation community type is widely distributed in the Mongolia. For the most important indicator of the steppe is dominant plant *Stipa krylovii* and sub dominant is *Cleistogenes squarrosa*, *Koeleria macrantha*, *Agropyron cristatum*. The *Cleistogenes squarrosa* - *Stipa krylovii* steppe which is covering in the wide plateau steppe between lower high mountains and south slope of hill is widely spreaded in the steppe regions of the Mongolia (Yunatov, 1950).

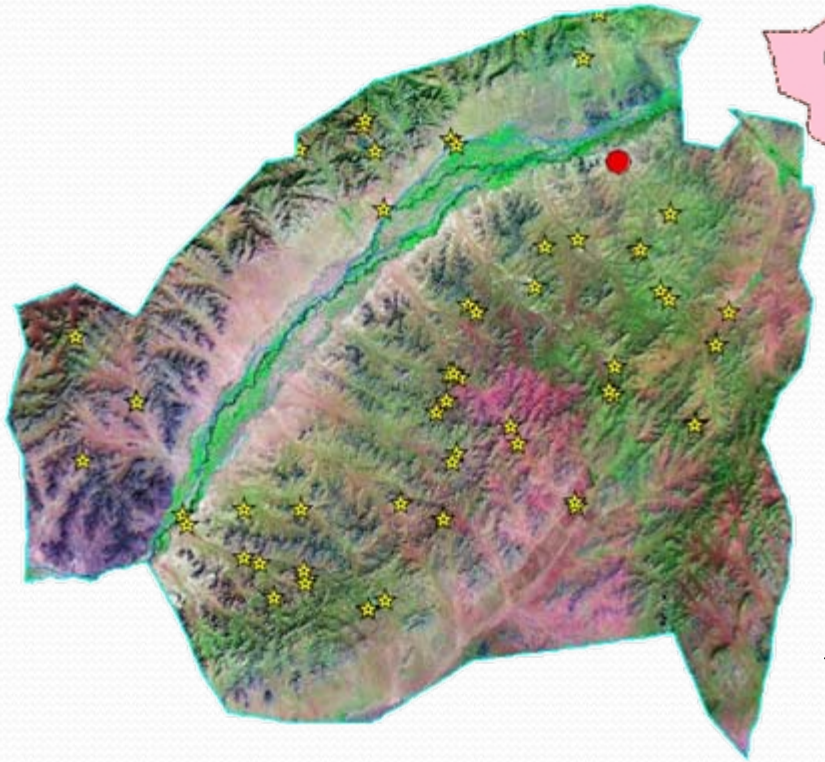
Objectives

- The recent situation of vegetation cover, structure and and comminities, estimate plant biomass amount, determine pasture degradation condition of the areas.

Study area

The study was included the areas of Altanbulag soum Tuv province of Mongolia. Throughout Mongolia the climate is extremely continental.

Altanbulag soum Tuv province has 566866 hectare area while its livestock population is 182670 sheep unit .



★ - Plots

Materials and methodology

- Geobotanical recordings using the method by A. P. Shennikov (1964) to determine a species composition and to estimate a canopy cover of vegetation.

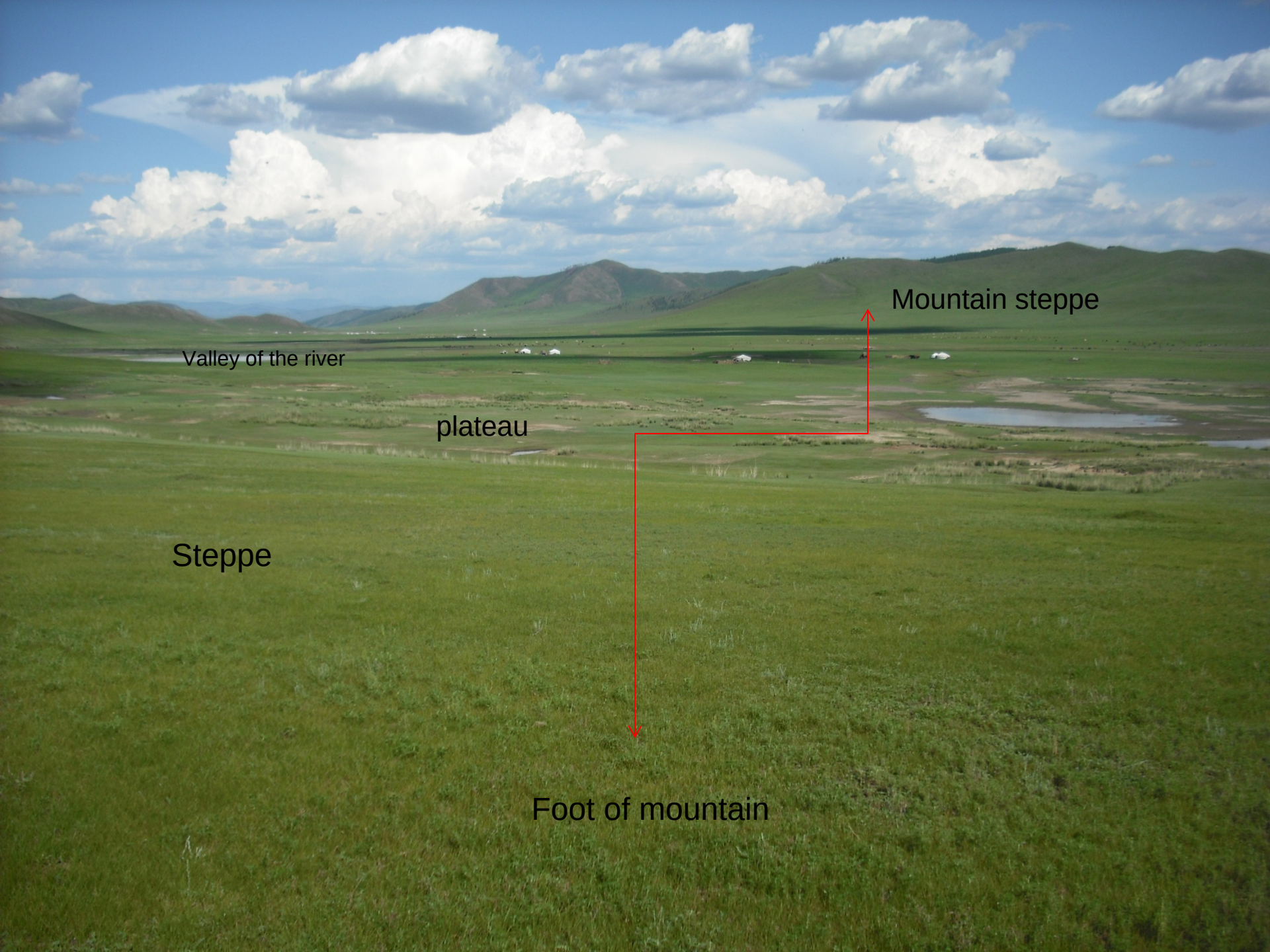
- At each site, we conducted 3-5 replicates of geobotanical assessment within plots (standart stand size was in the steppe (1m x 1m=1 m2).

- For the estimation of relative abundance of species we used an evaluation of O.Drude (Shennikov 1964). Nomenclature followed V. I Grubov 1982 (The Key to Vascular Plants of Mongolia).

- Plant biomass samples were taken by the method by I. A. Larin (1956). All plant biomass samples were dried in air and weigned in lab using electron balance with 0.1g scale.

- Classification of pasture degradation by O.Chognii (2001) is metod used to define pasture degradation.

- Using the method by transect


Mountain steppe
Valley of the river
plateau
Steppe
Foot of mountain

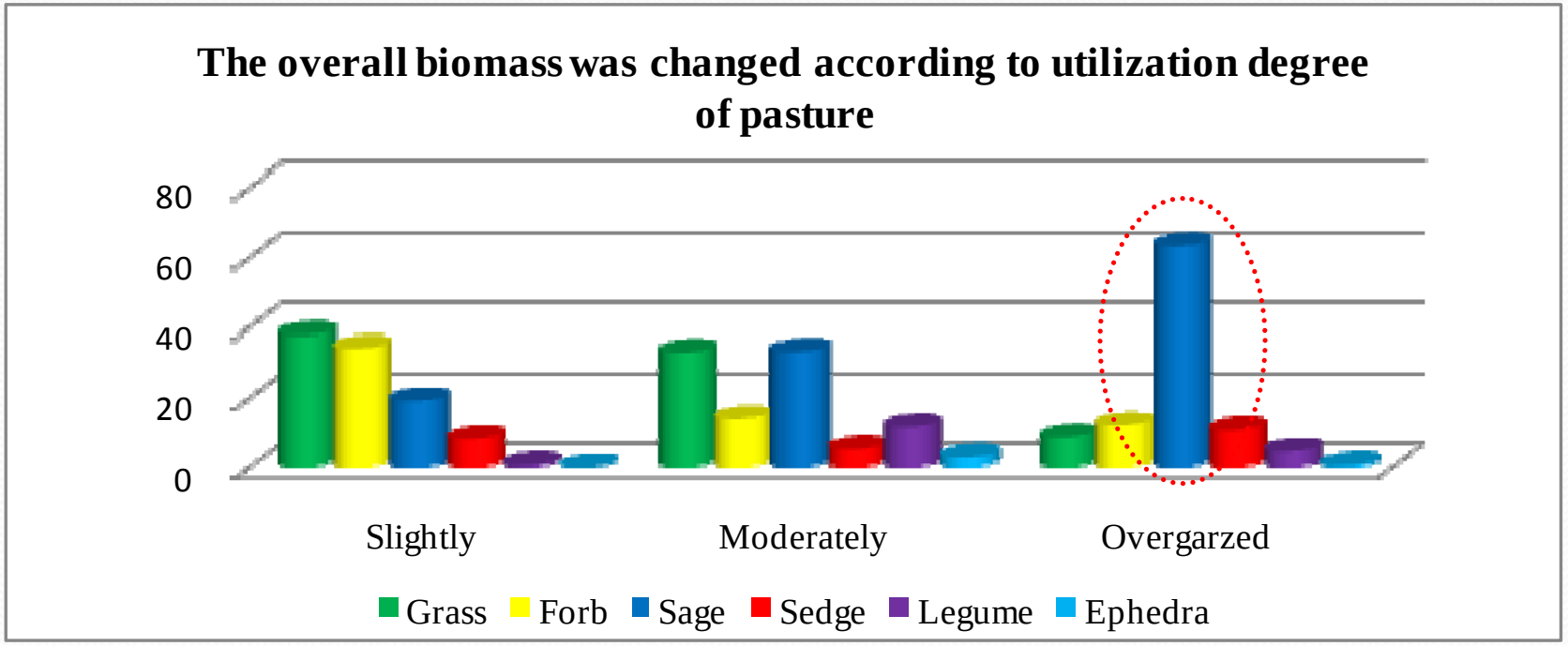
Vegetation

According to vegetation-geographycal classification, the study area includes into Eurasian steppe region, steppe zone of Middle Khalkh.(Ulziikhutag, 1989).

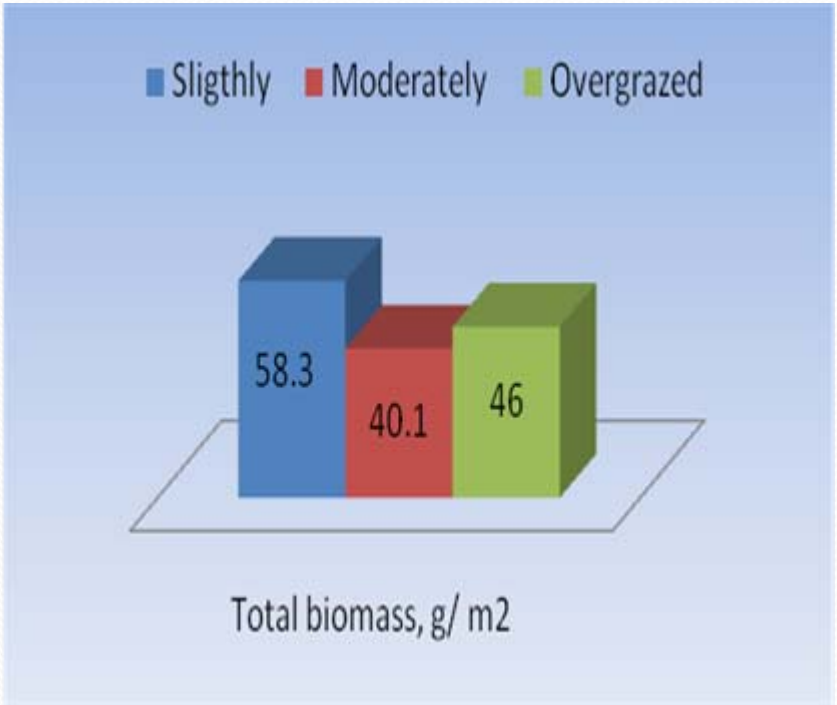
During the field survey have been observed that such communities as *Forb-Neddlegrass, Nedllegrass-forb-sagebrush* have been dominated in foot hills of mountain, and such communities as *Grass-Caragana, Nedllegrass-Forbs, Sedge-Grass, Sage-Sedge* have been dominated in south face slope of mountain, and such communities as *forb-Caragana, Cleistogenes-Stipa-Caragana, Stipa-Elymus-Sedge, Sedge-Sage, Elymus-Sage* in the dry steppe.

Results and discussion

Following results were found in pasture vegetation cover.



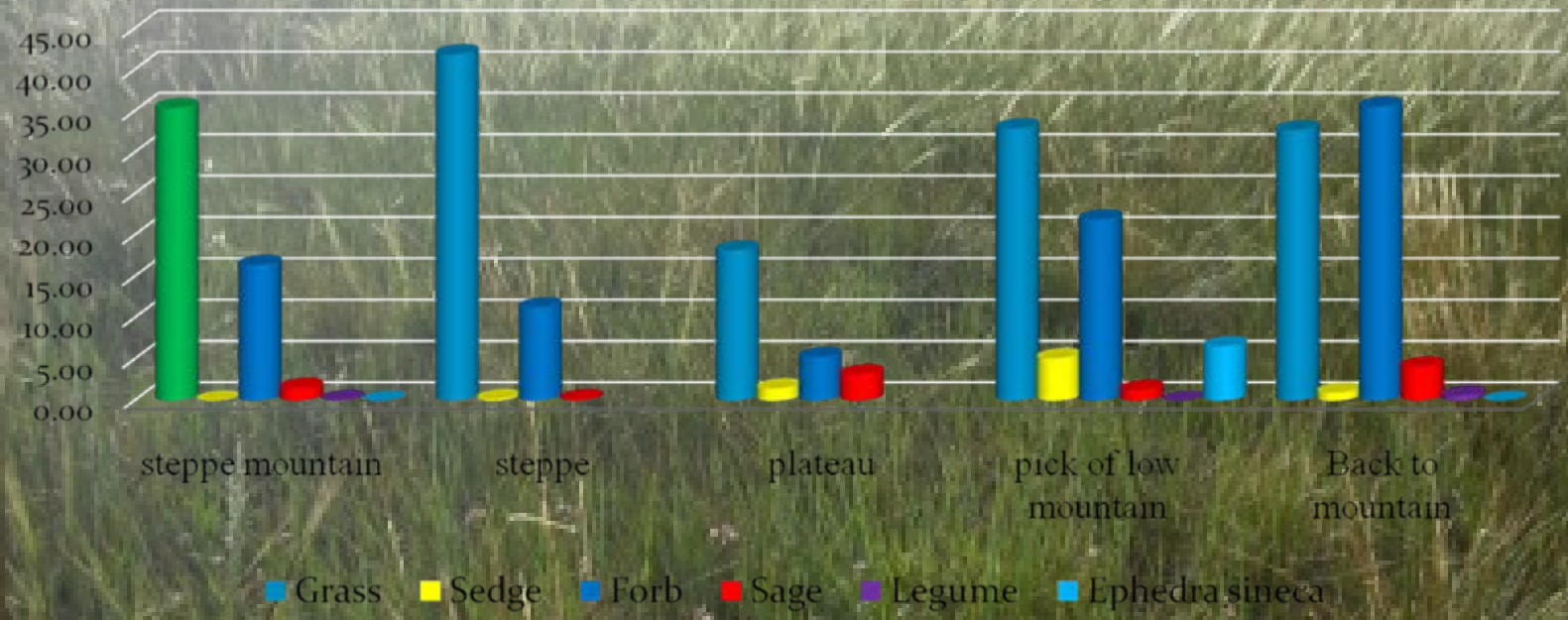
Total pasture area of Altanbulag soum 15% is slightly grazed, 29% is moderately grazed, 56% is overgrazed used.



Composition of total plant biomass (by per cent, %) of different grazing pasture of Altanbulag soum areas.

Pasture use		slightly grazed	Moderately used	Ovegrazed
Total plant biomass		58,3 g/ m^2	40,1 g/ m^2	46.0 g/ m^2
From which by per cent				
By functional groups:	Grass	37,8	**33,0**	8,6
	Forb	34,2	14,0	12,0
	Sage	19,1	**33,3**	**63,3**
	Sedge	8,2	5,2	10,8
	Legume	0,7	11,6	4,6
	Horsetell	0.0	2,9	0,7
Species number per square meter		8.1	9.2	8.2
Canopy cover (%)		65-75		

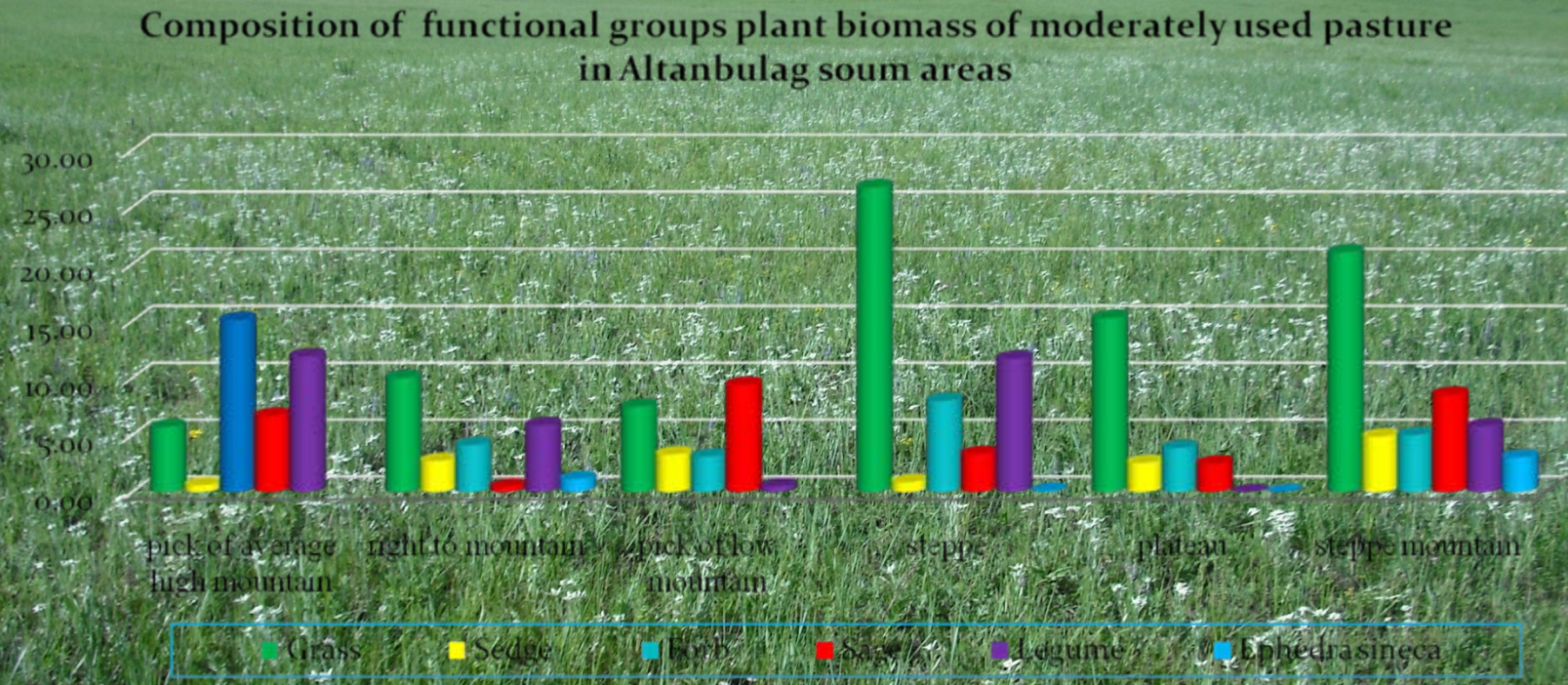
Sligthly grazed pasture



Community	Canopy cover (%)	Number of specious per 1m^2	Amount of yield g/m^2	Height of vegetative shoot /cm/	Height of generative shoot /cm/
forb-neddlegrass	85-95	14	58.3	8.5	15

Dominant species was *Stipa krylovii* from grass, subdominant was *Cleistogenes squarrosa, Agropyron cristatum,* from forb *Potentilla acaulis,* from sage were *Artemisia frigida, Artemiisa adamsii,* from sedge was *Carex duriuscula*.

Moderately grazed pasture



On the moderately used pasture the biomass of sage and horsetell is increased such as capacity of the grass

Stipa krylovii

Artemsia frigida

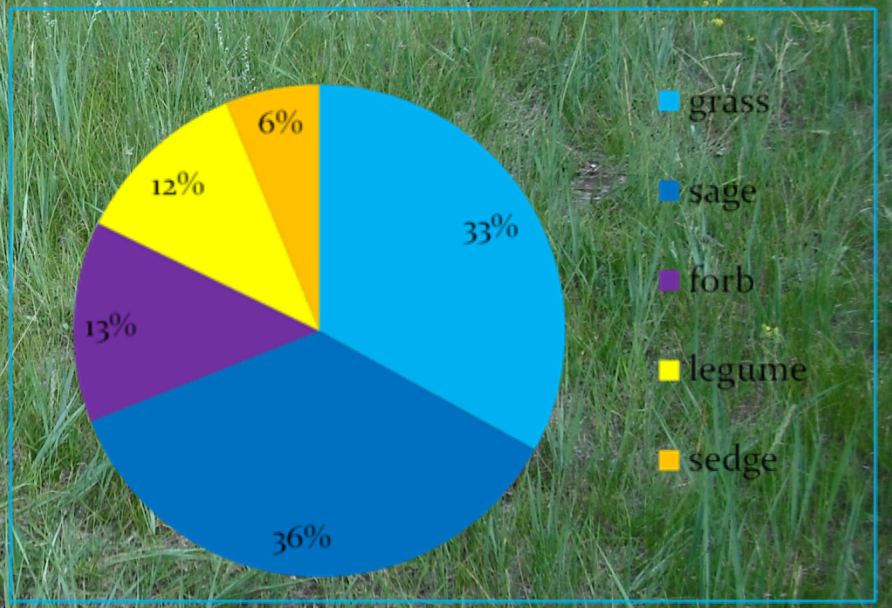
Elymus chinensis

Caragana pygmaea

Artemisia Adamsii

Community	Canopy cover (%)	Number of specious per $1m^2$	Amount of yield g/m^2	Height of vegetative shoot /cm/	Height of generative shoot /cm/
Carex duriuscula-Elymus chinensis	65-85	8	40.1	4.2	8

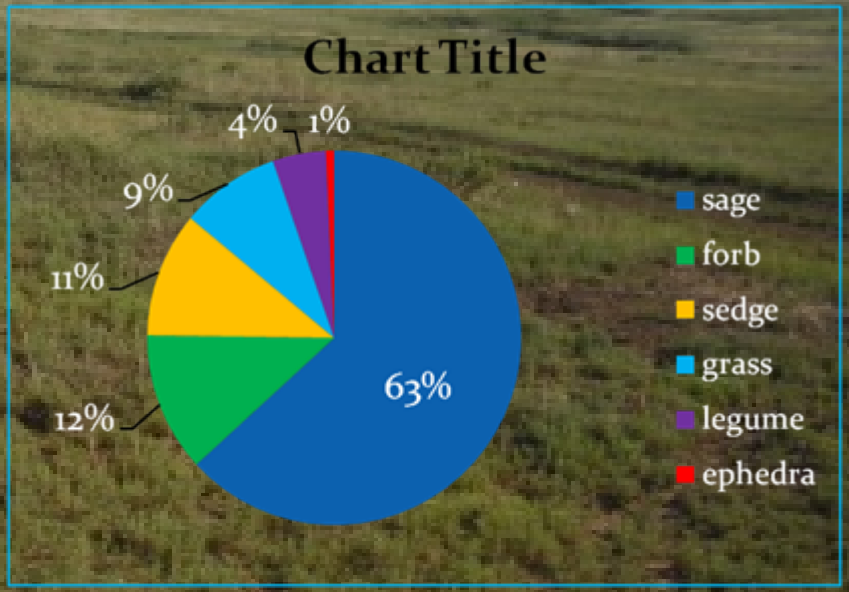
Dominant species is *Cleistogenes squarrosa,* from grass, subdominant was *Agropyron cristatum, Stipa krylovii,* from forb *Potentilla bifurca, Potentilla acaulis,* from sage were *Artemisia frigida, Artemiisa adamsii,* from sedge was *Carex duriuscula,* was *Ephedra sinica* of draftshrub and *Lappula intermedia* of annual plant.

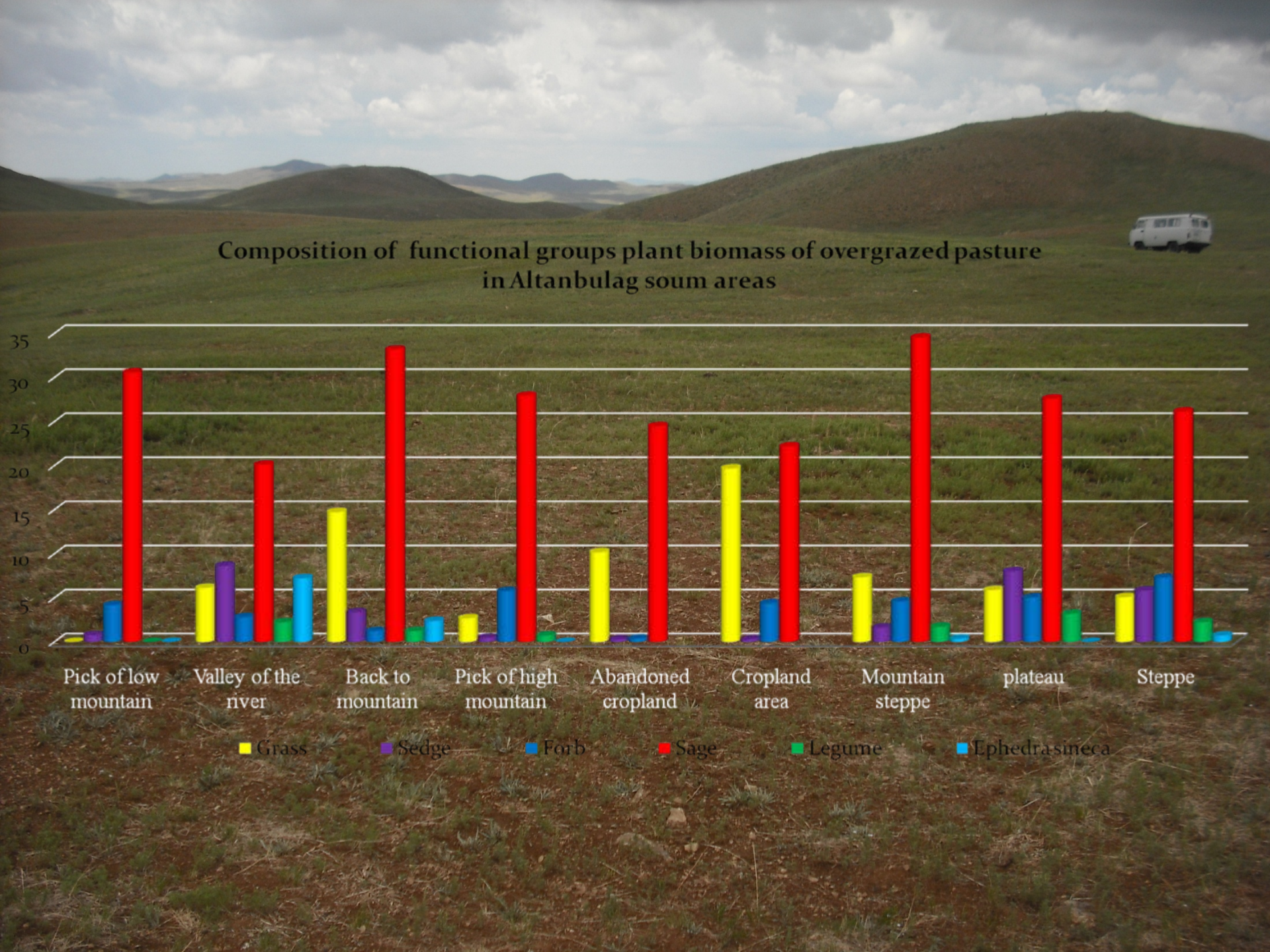


Overgrazed pasture

Community	Canopy cover (%)	Number of specious per 1m^2	Amount of yield g/m^2	Height of vegetative shoot /cm/	Height of generative shoot cm/
Carex duriuscula -Artemisia adamsii	50-60	8	46.0	8.2	6.5

Dominant species is *Artemisia Adamsii* from sage, subdominant was from sedge *Carex duriuscula,* from grass *Cleistogenes squarrosa.* Grass such as *Stipa krylovii* and *Agropyron cristatum* is abundance straightly decreased.




Composition of functional groups plant biomass of overgrazed pasture in Altanbulag soum areas
35
30
25
20
15
10
5
0
Pick of low mountain
Valley of the river
Back to mountain
Pick of high mountain
Abandoned cropland
Cropland area
Mountain steppe
plateau
Steppe
Grass
Sedge
Forb
Sage
Legume
Ephedrasineca

Conclution

- About 80 percent`s total areas of Altanbulag soum belong to moderately used and strongly degraded category.
- The total plant average biomass in the 58.9 g/m^2 in slightly used pasture and amount of total plant biomass ranges 40.6 to 40.7 g/m^2 in moderate and overgrazing pasture. In another amount of total plant average biomass in slightly used pasture is 18.3 g/m^2 more than amount in moderate and overgrazing pasture.
- Also have been observed that sage average biomass increased to 63.3 g/m^2 and amount of grass average biomass decreased to 8.6 g/m^2.

Thank you for you attention