

# Influence of the Grazing Conditions on the Floristic Diversity in the South Eastern part of the Gutai Mountains, the Maramures County

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## ABSTRACT

Phytosociological studies have been carried out to estimate species richness and species diversity in area where shepherding is an ancient custom. Our research has been conducted on the Gutai Mountains meadows, on an area of 130 hectares, aiming to monitor the diversity of plant species and the pastoral value of the grazing lands, used to feed the animals. Data processing was done based on botanical sampling, the pastoral value has been calculated, and the diversity has been estimated with the Shannon (H'). Thus, we have observed that after annual grazing, and lack of the pasture improvement measures, the floristic diversity suffers. Values Shannon index (H') are between 1.17 and 2.63, as the meadows is being invaded by low forage value species (eg. *Nardus stricta*) that occupy a considerable area. The pastoral value of the pasture was also calculated, that was of 0.85 points; this low value being influenced by overgrazing, soil compaction, tendency of invasive plants with low nutritional value. The influence of uncontrolled grazing on mountain pasture results in a decrease in pasture productivity due to reduced diversity of grassy carpet, where acidophilus species have appeared, and weeds have invaded the grazing land area. It is well to remember that the long-term exerted anthropogenic pressure on grasslands affects the ecosystem diversity.

**Keywords:** *diversity, grazing, pastoral value, Shannon index.*

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## INTRODUCTION

Agricultural biodiversity has an intrinsic value, as it provides the support system of life and the development of the socio-economic systems. The influence of agricultural practices on the plants diversity has been extensively studied in the natural ecosystems (Cristea *et al.*, 2004). The reality is different when we speak about the Gutai Mountains natural pastures - a region which is year by year exploited by grazing. Therefore it is necessary to conduct the phytosociological

studies to understand the current status of vegetation, species richness, diversity, explain or predict its pattern, relationships, classification and distribution of plant communities for proper planning and conservation (Jayakumar *et al.*, 2002; Ilorkar and Khatri, 2003; Krishna *et al.*, 2014 ).

## AIMS AND OBJECTIVES

In this survey, we have pointed to the floristic diversity in the South Eastern part of the Gutai Mountains, where the annual small ruminant

grazing in extensive system occurs. The objectives of this study consisted in the calculation of the diversity index and the pastoral value of meadows.

### MATERIALS AND METHODS

This research was conducted for a period of three years in the South Eastern part of the Gutai Mountains at an altitude of 1000-1300 m. The plants species diversity was calculated using the Shannon index ( $H'$ ) (1948). After the vegetation bonitation, the pastoral value was calculated according to the Practical Guide Rotar *et al.*, (2009).

### RESULTS AND DISCUSSION

When we are referring to the pastoral value we consider the vegetation biodiversity too, because the structure of the vegetation cover (respectively the presence of some certain species) is influencing the pastoral value (Sărățeanu *et al.*, 2008).

To analyze the floristic diversity in the South Eastern part of the Gutai Mountains, we made up observation cards which contain information on plant species, plant communities and plant associations observed and identified in the field. It was found that prevail acidophile phytocoenosis erected by *Nardus stricta* – *Viola declinata* into which penetrate shrub species, such as: *Vaccinium myrtillus*, *Vaccinium vitis-idaea*. On compact soil grow the *Deschampsia caespitosa* which is a low value forage grass, and *Festuca rubra* which is a valuable forage grass is less frequent. In patches there are oligotrophic areas with various species of *Sphagnum* sp., *Carex* sp., *Drosera rotundifolia*. Super used grazing lands are invaded by nitrophile vegetation, and weeds such as *Urtica* sp., *Veratrum album*, *Rumex* sp. make their appearance too.

The Shannon index values generally fit in between 1.5 and 3.5, and on the studied lawn the values of this parameter vary between 1.17 and 2.63. These values indicate that the floristic structure of the analyzed vegetation has a reduced diversity due to the aggressiveness of plant species

such as *Nardus stricta* which are invading large surfaces.

After the main flora plant species growing on the analyzed meadows have been studied, we could calculate its pastoral value, taking into account that it is exploited by sheep and goats grazing, each year. The lack of maintenance in the permanent natural meadows from the Gutai Mountains is reflected in the presence of fallow mounds. The calculated pastoral value is low, 0.85 points; this low output is closely connected to the environment conditions of the studied mountainous zone and mostly to the human activities dedicated to his animals.

### CONCLUSION

The analysis of the plants species diversity on an area of 130 ha denotes the presence of a pasture with low floristic diversity; there is a tendency to dominate by a single species, which will reduce local biodiversity. We have also found that the mountain meadow has a very low, subunitary pastoral value.

The lack of maintenance, the lack of a better animal load, and the pasture grazing period extended beyond the normal limits, caused the invaluable grassy vegetation invasion that affects the ecosystem biodiversity.

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