PLANT LIFE FORM, GROWTH FORM AND CLONALITY IN BULGAN RIVER BASIN

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INTRODUCTION

Studying plant functional trait is a promising way to tackling important ecological questions such as vegetation responses to environmental variation or change, notably in climate, land use and natural disturbance regimes. Empirical studies on plant functional types and traits have flourished recently and are rapidly progressing towards an understanding of plant traits relevant to local vegetation and ecosystem dynamics.

Our main goal of this study is how plant life from, growth form and clonality changes in altitudinal gradients with different climatic conditions. To reach this research goal we have chosen 29 most common, widely distributed species in target study region, which could represent a growing environmental condition in all altitudinal gradients based on a baseline survey study, and divided Bulgan river basin into 3 main altitudinal groups: 1000-1400 m a.s.l, 1500-2000 m a.s.l, above 2100 m a.s.l. In total 840 individual plant life from, growth form and clonality were measured.

METHODS

In this research we followed international methodological protocol *(The handbook for protocols for standardised and easy measurement of plant functional traits worldwide, 2003)* instructions. The species are selected with the following two underlying objectives: (i) to obtain good representation of the plant community under study; (ii) to provide enough information to scale up the values of trait from the plant community level. In each individual plants we have measured:

- **Life form (Raunkiaer, 1934**) the relation of the perennating tissue to the ground surface.
- **Growth form** determined by canopy structure and canopy height. This is a categorical trait dividing growth from into 19 groups.
- **Clonality** for aboveground structures observed minimum of 5 plants, for belowground structures dig up 2 plants from 1 species.

CONCLUSIONS

Plant life form, growth form and clonality are widely varied in the Bulgan river basin under climate and altitudinal gradients. There are more functional types in lower altitude than the upper zones and the main reason of this is growth conditions, vegetation communities are more stable in above 2100 m a.s.l comparing the lower zones. Above 2100 m a.s.l we found a high mountain forest steppe whereas steppe, desert steppe, desert and oasis ecotypes are occuring below 1500 m a.s.l. Clonality trait vastly founds in lowland and upper mountain areas. This being associated with high grazing pressure by livestock during the winter and summer season.

RESULTS

Life form. We measured 16 species in above 2100 m a.s.l, 18 species in 1500-2000 m a.s.l, 17 species in 1000-1400 m a.s.l, 840 individuals in total. Number of hemicryptophytes increases in higher altitudes due to climatic “harsh” condition (Figure 1).

Growth form. We measured 16 species in above 2100 m a.s.l, 18 species in 1500-2000 m a.s.l, 17 species in 1000-1400 m a.s.l, 840 individuals in total. The growth form trait is getting more variance in lower altitude than the higher upper areas (Figure 2).

Clonality. For studying clonality we measured 168 individuals in 3 different range of altitude. Below ground clonality is higher in 1500-2000 m a.s.l whereas above ground clonality is widely in 1000-1400 m a.s.l and 2000< m a.s.l (Figure 3).

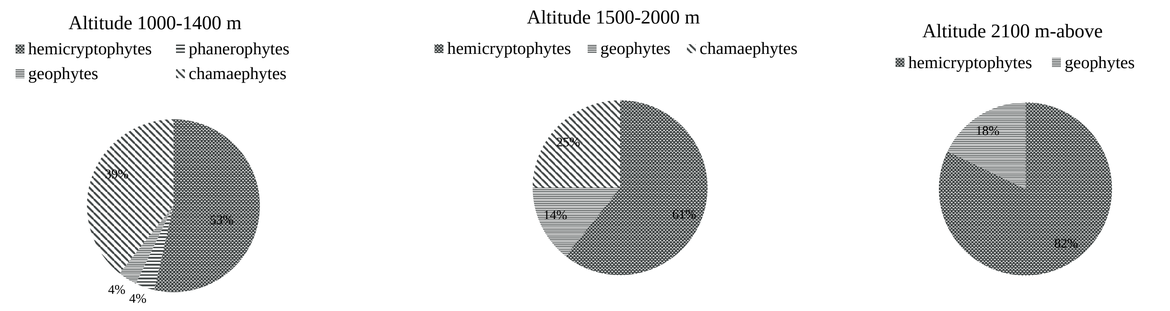

Figure 1. Species life form

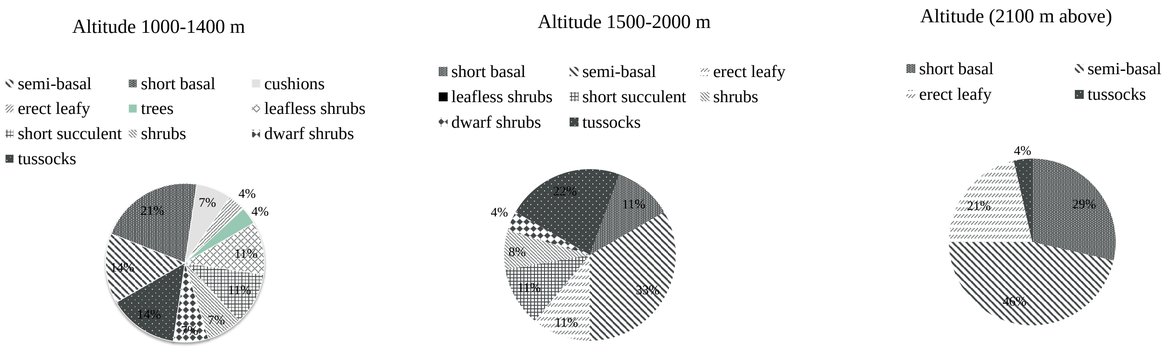

Figure 2. Species growth form

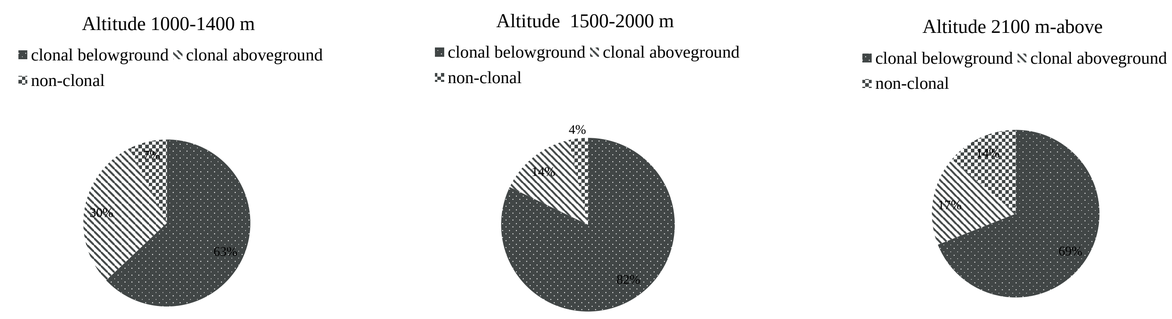

Figure 3. Clonality

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