

Abstract

This diploma thesis is studying population dynamics of endangered species *Silene acaulis* in the High Tatra Mountains in Slovakia. *Silene acaulis* is a species of extreme alpine habitats creating cushions that provide a microclimate acting as a facilitator of establishment of other species in the alpine communities. This dome-like structure has one woody taproot making it easier to distinguish each individual. It is thus a perfect model species for determining the population dynamics drivers. The findings help in understanding future behaviour of the species and whole alpine ecosystems. Population data have been collected since 2013 or 2014 in two valleys in the High Tatras providing a database suitable to study various effects on species performance. Data collection includes marking, measuring, counting of flowers and capsules, viability and new seedlings recording, gender identification and comparison of vegetation structure within and in close proximity of a cushion. The data on vegetation were analysed using CCA ordination and the population data were analysed using Integral Projection Models. The results show that the breeding system of Slovak *S. acaulis* is gynodioecious and the gender affects the size of cushions, individuals with both female and hermaphrodite flowers being the biggest. The vegetation composition is richer within the cushion in comparison with open space, therefore *Silene acaulis* growing in the High Tatras is acting as a facilitator in this environment. The effect of various predictors on vital rates was tested and the most informative models were found considering BIC values. Size of the cushion is affecting all vital rates. The cushion compactness seems to have prevalent impact on growth and fecundity. The effect of climate conditions is also included in the models, however its influence on the population dynamics of the plant is seemingly negligible. The performance of Slovak *Silene acaulis* populations is affected by compactness of the cushions, which is protecting it and other plant species growing within the branches from the harsh environment. The populations are slowly shrinking, therefore continuous observations are necessary to prevent additional decline of the number of individuals.