Abstract

Serpentine areas in the Czech Republic form minor but important islands in the landscape with specific chemical properties such as high content of magnesium and other heavy metals. Due to this, serpentine is toxic for most plants. Increased demands on the survival and occurrence of plants lead to the emergence of serpentine specialists obligatorily specialized in these extreme habitats.

Currently, serpentine areas are threatened by gradual overgrowth of sites, insufficient or poor site management and fragmentation or shrinkage of sites due to anthropogenic activities. Along with the disappearing localities, the serpentine specialists, are becoming highly endangered. *Minuartia smejkalii* is highly endangered serpentine specialist with an endemic occurrence in the Czech Republic with great need of its conservation.

The aim of the work was to collect data on population dynamics of the species and identify habitat and climatic factors affecting population growth. We studied dynamics in all existing 7 populations during the period from 2006 to 2020 were collected. We linked these data to information on population dynamics, habitat and climatic factors and analysed them using Integral projection models (IPM).

The study presents the importance of individual habitat and climatic conditions on the dynamics of *M. smejkalii*. It will also try to estimate the development of the population dynamic during climate change and propose a suitable management not only for this endemic species, but for the entire eminent serpentine habitat of the Czech Republic.

The result of this diploma is the Integral projection model, which revealed a significant effect of clonal reproduction on the population dynamics of *M. smejkalii*. Based on IPM, the survival of individuals has the greatest influence on population dynamics. Large flowering individuals, large non-flowering individuals, seeds and the seed bank play an important role in the life cycle of *M. smejkalii*. The addition of climatic and habitat factors to the models describing vital rates did not show any effect on the population dynamics of *M. smejkalii*. Based on these results, climatic and habitat conditions were not added to the final IPM.

Management applied at localities since 2016 has probably caused an increase in the number of individuals at localities. However, this hypothesis could not be verified using vital rates or IPM models. Their effect will have to be examined in further studies.

Key words: serpentine, *Minuartia smejkalii*, Integral Projection models, population dynamics, climate, abiotic conditions, management