

5. ABSTRACT

Comparison of population dynamics of *Gladiolus palustris* and *Gladiolus imbricatus* in the Czech Republic

The aim of my diploma thesis was to compare population dynamics of two *Gladiolus* species with contrasting distribution pattern in the Czech Republic and so to contribute to understanding the reasons for rarity of plant species.

The aims of the project were: 1) Description and comparison of population dynamics, identification of life cycle and its critical stages in both studied species, 2) Identification of habitat requirements of both studied species and 3) Elaboration of maps of existing and historical localities of both studied species in the Czech Republic.

The whole life cycle of both species was identified. Both species exhibits dormancy, but its length was not possible to identify because of short duration of the study. But as long as three season absence was recognized. Survival showed the highest values for elasticity, flowering stage was identified as the critical one for both species together with seedlings and their survival in populations where they were observed. Germination was less important in *Gladiolus palustris* species.

Finite rate of increase was lower than one at 3 – 4 of monitored populations. Comparing studied species, *Gladiolus palustris* had more stable populations, populations of *Gladiolus imbricatus* either declined or rapidly grew. The reasons could be in the age difference of populations or difference in the life span of studied species. The results suggest that *Gladiolus imbricatus* lives shorter.

The extinction probability analysis predicts extinction of all declining populations within 30 years.

All measured reproductive traits (number of flowers, number of capsules number of seeds per capsule) showed significantly higher values at *Gladiolus imbricatus*. No seedlings were observed at *Gladiolus palustris* populations. Perhaps the species does not germinate every year, the germination could be concentrated into one of several years.

Also the rest of fitness related traits (plant height, leaf length) showed significantly higher values at *Gladiolus imbricatus*.

Habitat requirements differed in terms of species composition. Difference in soil composition in studied populations was only marginally significant, but suggested that *Gladiolus palustris* requires soil richer in nutrients. *Gladiolus imbricatus* inhabits wider spectrum of *Molinion* and *Polygono-Trisetion* communities.

Number of localities of both species declined – by 70 % for *Gladiolus imbricatus* and by 89 % for *Gladiolus palustris*.

Altogether *Gladiolus imbricatus* seems to have higher competitive ability because of higher reproduction rate and dispersion ability. But its life span is possibly shorter.

Key words: *Gladiolus*, populaton dynamics, transition matrix, dormancy, critical stage of life cycle, commonness and rarity