

Summary of the action plan for *Gentianella praecox* subsp. *bohemica*

Gentianella praecox (A. & J. KERNER) E. MAYER subsp. *bohemica* (SKALICKÝ) HOLUB was described in 1969 (SKALICKÝ 1969) under the specific name *Gentianella bohemica* SKALICKÝ, which was found to differ from previously described taxa *G. germanica* (WILLD.) BÖRNER and *G. austriaca* (A. & J. KERN.) HOLUB.

Public notice No. 395/92 issued by the Ministry of the Environment of the Czech Republic classifies *Gentianella praecox* subsp. *bohemica* as a protected species in the Critically Endangered category. The Red List of the Czech Republic (PROCHÁZKA 2001) also places it among Critically Endangered taxa (C1). The taxon is listed in the Red Book of the Czech Republic and Slovak Republic (ČEŘOVSKÝ *et al.* 1999) and was included in Supplement II of directive No. 92/43/EHS of the Council of the European Communities.

Gentianella praecox subsp. *bohemica* is an endemic of the Bohemian Massive and a sub-endemic of the Czech Republic. Its historical area of distribution encompasses the Czech Republic, northern Austria, Bavaria and southern Poland. It once occurred in most of the Czech Republic except for west and north-west Bohemia and south-east and east Moravia. It has been credibly recorded from over 650 localities in the Czech Republic and a few dozen historical localities in Austria, Poland and Bavaria. Since the year 2000, it is known from only 111 localities despite intensive searching: 69 in the Czech Republic, 30 in Austria, 8 in Germany, 4 in Poland. Of these 111 localities, (*i.e.*, 2005–2010) not a single flowering individual was found at 12 in the last six years (BRABEC 2005c, 2009, ENGLEDER 2006, 2010, GERŽA & ČEPA 2007, GOŁAB 2004, RÖSLER 2005, ZIPP 2009, T. ENGLEDER – pers.comm., M. SMOCZYK – pers.comm.).

In the past, the taxon occurred throughout most of the area of the Czech Republic, in the mesophytic and oreophytic belt (rarely in the thermophyticum). It grew especially in pastures of the association *Cynosurion*, low-grass meadows of the associations *Violion caninae* and *Nardion*, in some mown mesic and moister meadows of the associations *Arrhenatherion* and *Molinion*, and in many disturbed habitats (*e.g.*, road verges, edges of quarries and wood margins).

The decline in the number and extent of localities of the species is probably related mainly to changes in land use (end of grazing, especially by sheep and goats, eutrophization, overgrowth, forestation *etc.*).

Objectives of the action plan:

Long-term objectives:

- 1) To stop the decline in the number and size of populations of *Gentianella praecox* subsp. *bohemica* at at least 27 priority localities of the species in SW Bohemia, SE Bohemia, the Drahanská vrchovina region and the Tábor region.
- 2) To improve the state of the species' populations at five priority localities in the Českomoravská vrchovina region.

Medium-term objectives:

For the first ten years after the action plan is adopted, the following objectives are set:

- 1) To ensure or optimize management at all 32 priority localities of *Gentianella praecox* subsp. *bohemica*. At each locality, it is necessary to secure high quality management of a sufficiently large area.
- 2) To continue with regular monitoring of all recent localities of the species.
- 3) To gain new knowledge about the biology and ecology of the species.

- 4) To ensure that parties farming at localities of *Gentianella praecox* subsp. *bohemica*, are sufficiently aware of the species' protection.
- 5) To compose a list of potential source and target populations for repatriation of the species.

Principles for the implementation of the action plan:

Based on ten-year monitoring of the status of populations and management at localities, results of vegetation studies, (BRABEC, KŘENOVÁ & RÖSLER – in prep.), experimental management and matrix modelling (BUCHAROVÁ, BRABEC & ŠTEFÁNEK – in prep.), the most important phases of the life cycle of *Gentianella praecox* subsp. *bohemica* were ascertained, and possibilities to influence them by management were assessed. The most important stages of the species' life cycle is germination of seeds from the seed bank and the survival of the seed bank. Regular removal of above-ground biomass (by mowing or pasturage) at suitable times together with the creation of gaps in the vegetation by turf disruption facilitates both germination of seeds from the seed bank and satisfactory survival of established seedlings. This principle of management is without doubt the most effective for the protection of *Gentianella praecox* subsp. *bohemica* and constitutes the basis of the entire action plan. The main principle governing all proposed measures is the creation of plots for germination and survival of plants of *G. praecox* subsp. *bohemica* in meadow vegetation at current localities.

Basic measures comprise: (1) removal of biomass during the time of the largest growth of biomass (*i.e.*, end of spring, beginning of summer) mowing or grazing (optimally by sheep and goats, somewhat less so by cattle and horses); (2) removal of newly accumulated biomass (aftermath) by mowing or grazing at the end of summer (unless there is a danger of damaging budding, flowering and maturing plants) or after plants have matured and released their seeds, *i.e.*, approximately from October until November (or possibly in the pre-spring period); (3) creation of gaps for seed germination in the vegetation after maturation and release of seeds, *i.e.*, approximately from October to November (or in pre-spring) by turf disruption (harrowing, aeration and raking) or grazing. The fundamental approach is modified as required by the vegetation type, the state of each locality, position of each locality, number of flowering individuals of *G. praecox* subsp. *bohemica* and the current course of the weather during the season.

In Bavaria, long-term attention is given to research on *G. praecox* subsp. *bohemica* and to the deployment of measures at its localities (coordinated by the Bayerisches Landesamt für Umwelt). Similar action plans are starting up in Austria (coordinated by the Österreichische Naturschutzjugend Haslach). In Poland, targeted protection of the species is at its beginning. Experience from Austria, Germany and the Czech Republic is regularly discussed at international workshops (Bayreuth – 2004, Freising – 2006, Augsburg – 2008).