

SGSII-11 *Littorella uniflora*, *Hypochaeris glabra* and *Sedum villosum*



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NEWS

Project name: Preparation of the Underlying Documents by Experts for the Decision to Establish an Action Plan for the Endangered Plant Species *Littorella uniflora*, *Hypochaeris glabra* and *Sedum villosum*

Project Nr.: MGSII - 11

Project location: Various locations throughout the Czech Republic

Financial support: EEA Grants, Small Grants Scheme (SGSII) entitled “Action Plans for Endangered Species II”, support area 2: “Revision and Preparation of New Action Plans and Management Plans for Endangered Plant and Animal Species”

Total Resources: 904,043 CZK incl. VAT

Financing: Financial resources from EEA Grants are assigned in the amount of 768,437 CZK, which is 85% of the anticipated total project expenditure. The state budget grants financial resources in the amount of 135,606 CZK, which is 15% of the anticipated total project expenditure.

Project duration: 1.4.2015 – 30.11.2016

Project partners:

- University of South Bohemia in České Budějovice
- Institute of Botany ASCR

Project guarantee:

- Mgr. Barbora Čepelová, AOPK ČR, Division of species protection, E: barbora.cepelova@nature.cz
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Overall Summary of the Project and Its Effects on the Species of Interest

The anticipated objectives and products were fulfilled and the project was officially closed on 30/11/2016.

We consider the most important benefits of the project to be the gaining of consistent new information on the critically endangered species *Littorella uniflora*, *Hypochaeris glabra* and *Sedum villosum*. Based on this information, it will be possible to provide much better conservation of these species. As regards the preparation of the action plans for these

species, the results will be used as a high-quality underlying document for the contents of the action plan....(overall summary full text).

Project Objective and Scope:

The project focused on three critically endangered species (*Littorella uniflora*, *Hypochaeris glabra* and *Sedum villosum*) and its objective was to gather knowledge of these species, on the basis of which a decision could be taken to establish action plans for them. With respect to the great decline of historical sites and the diminishing populations of these species at the existing sites, action plans appear to be a suitable tool to preserve them in the Czech Republic. However, the species were established as insufficiently known, and therefore it is necessary to first gain new knowledge of their occurrence and ecology.

Activities within the Project

Littorella uniflora

Monitoring of Recent Sites (A. Kucerova, BU AV CR; J. Kolar)

All recent sites in the Czech Republic (fishponds Osika, Stankovsky, Hejtman, Kralek, Rytir and Novy near Kunzak, Horni Mrzatec and water reservoirs Karhov near Studena and Laz) were visited several times in 2015–2016. For each site individually, its physical and chemical water quality properties and the physical and chemical properties of the sediment were determined. The populations of *Littorella uniflora* were surveyed in detail, their density was estimated and phytosociological relevés were taken in its growths. In 2016 permanent areas in the sites were defined where the phytosociological relevés were taken, numbers of individual plants were established and the items were drawn on the map.

Research in Biology and Distribution (J. Kolar)

On the basis of Czech and foreign resources, research was made into the biology and ecology of *Littorella uniflora*. The species is quite unique from the viewpoint of its biology and ecology in the Czech Republic, and detailed knowledge of these characteristics is therefore necessary for its conservation. On the basis of herbaria and database excerpts, maps of historical distribution of *Littorella uniflora* were created.

Proposed Sites for Reintroduction (A. Kucerova, BU AV CR; J. Kolar)

Based on data on the historical distribution of the species, selected historical sites in the Trebonsko region and in the Ceska Kanada Nature Monument were visited in 2015 and their potential for the possible reintroduction of the species was evaluated. The species was not identified at any of the sites. The results of this activity imply that the occurrence of the species can be supported through reintroduction at verified sites.

Cultivation and Seed Bank (A. Kucerova, BU AV CR; J. Kolar)

A cultivation experiment was carried out in 2015 to monitor the bloom phenology of *Littorella uniflora* in relation to its emergence above water level. Eight flower pots with the species were placed in each of four water reservoirs. Two pots in each reservoir were gradually emerged after approximately one month and the bloom phenology was monitored. The experiment continued until the end of October. After that, individual plants were removed with the substrate and the seeds were counted. An experiment to verify the germination rate was also established.

For **comprehensive results**, see the study entitled Analysis of the Current Occurrence of and Threats to *Littorella uniflora* in the Czech Republic and the Preparation of Underlying Documents for a Possible Action Plan (czech version only).

Hypochaeris glabra

Monitoring of Recent Sites (M. Stech, JU)

All recent sites in the Czech Republic, namely Zitec – village green and Zitec – rock outcrop on the northern edge of the

village, were visited in 2015–2016. Phytosociological relevés and soil samples were taken at the sites and individual plants were counted. Analysis of the genome size was made for selected individual plants in 2016 (cytometrical analysis) which did not prove cross-breeding with *Hypochaeris radicata*.

Proposed Historical Sites with a Potential for Recent Occurrence (M. Stech, JU)

Based on the main herbaria excerpts (data obtained from RNDr. Jitka Stepankova, CSc) and knowledge of the current condition of the regions, the following areas were proposed with suitable biotopes to look for new sites: Trebonsko region, Pardubicko region, surroundings of Prague and Hodoninska Dubrava.

Review of the Proposed Historical Sites (M. Stech, JU)

Several dozen potentially suitable or historical sites in the Trebonsko region were visited in 2015 and 2016. Other sites were visited near Pardubice, Hradec Kralove and Holic (eastern Bohemia), Vrane near Prague and the larger vicinity of Hodoninska Dubrava in South Moravia. The species was not identified at any of the visited sites. Extreme droughts during the season had a very adverse effect on the development of the species which seeks primarily desiccating habitats. One historical site was confirmed and one new site was identified in 2016. The newly identified site is most prospective from the viewpoint of species conservation.

Identification of Ecological Parameters at the Prospective New Sites (M. Stech, JU)

Phytosociological relevés and soil samples were taken at the two new sites and individual plants were counted.

For **comprehensive results**, see the study entitled Analysis of the Current Threats to *Hypochaeris glabra* in the Czech Republic and the Preparation of Underlying Documents for a Possible Action Plan (czech version only).

Sedum villosum

Monitoring of Recent Sites (A. Kucerova, BU AV CR; J. Jersakova, JU)

Seven sites at which the species occurred after 2000 were visited in 2015. The occurrence was only confirmed at four sites – the Bozidarske raseliniste National Nature Reserve, the Strocov National Nature Monument, Kostelni vrch and Knizeci plane in the Sumava National Park. Phytosociological relevés and soil samples were taken at these sites, pH and conductivity was measured, and the fertile and sterile individual plants were counted. The sites were revisited in 2016, individual plants were counted and the physical and chemical properties of the water were determined.

Historical Distribution (J. Jersakova, JU)

Excerpts were made from the main and regional herbaria and data were obtained from databases on the historical distribution of the species. This information was used to propose historical sites that are suitable for visiting and to prepare a map of historical distribution.

Proposed Sites for Reintroduction (A. Kucerova, BU AV CR; J. Jersakova, JU)

As part of the review of historical sites, a total of 17 historical sites of the species and one site potentially suitable for reintroduction were reviewed. Phytosociological relevés and soil samples were taken at the prospective sites. Several revitalised sites in the Ceskomoravska Highlands, the Ryzovna Nature Reserve (the Krusne Mountains) and the Bukacka National Nature Reserve (the Orlicke Mountains) appear to be suitable for reintroduction.

Reproduction and Seed Bank (J. Jersakova, JU)

Fertile plants were counted at all recent sites. To evaluate the germination rate of the seeds of the current populations, seeds were sampled in August 2015 at Knizeci plane and the Bozidarske raseliniste National Nature Reserve. Seeds could not be sampled in another two populations, as the plants almost did not bloom. Seeds from cultivated plants originating at Kostelni vrch and the Strocov National Nature Reserve were therefore used for the germination rate test. The seeds were sown and cultivated for one month. The germination rate differs from site to site, with the highest being identified with seeds from the sites in the Sumava region. The seed bank was also examined. The seeds of *Sedum villosum* were placed in nylon nets in a frame and put into soil in the autumn of 2015. The frames were taken in several stages in the next season. The results show that most of the seeds of *Sedum villosum* germinate in the same or the

immediately following season.

Identification of Ecological Requirements of the Species (A. Kucerova, BU AV CR; J. Jersakova, JU)

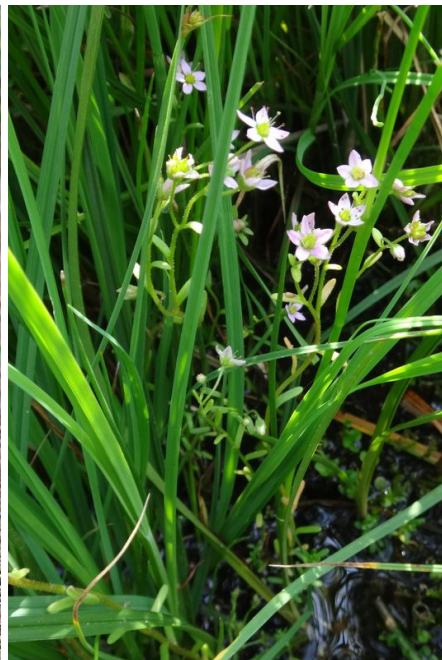
To gain new information on the effects of competition, shading and moisture on the growth of the species, two experiments were carried out. In the first, seeds were sown in pots with sedge growths of various density, in the second, parts of the plant were submerged for 14 days. We monitored the germination, growth and survival of the plants during the season. The analysis of the measured values for the species after planting gave evidence of the effects of shading and competition from sedges on the growth of the plants. The second experiment gave results that made it apparent that a more long-term submersion of the plants has adverse effects; however, we cannot preclude that some plants may later regenerate from lateral stems.

For **comprehensive results**, see the study entitled Analysis of the Current Threats to *Sedum villosum* in the Czech Republic and the Preparation of Underlying Documents for a Possible Action Plan (czech version only).

Project Publicity (Nature Conservation Agency of the Czech Republic)

In the course of the project, two information seminars were held, the project website maintained and two promotional materials published. A leaflet on *Littorella uniflora* can be downloaded here (czech version). Information panels on *Littorella uniflora* and *Sedum villosum* are placed in the Collection of Water and Wetland Plants in Trebon.

Photos:



Partner logos:



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