

Introduction to botanical part

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Kick off Meeting – Gedächtnis der Landschaft /
Paměť krajiny

03/05/2017, Nationalparkverwaltung Sächsische
Schweiz, Bad Schandau



BOTANICKÝ
ÚSTAV AV ČR
v.v.i.

Paměť krajiny – přeshraniční
rozvojová opatření v Česko-
Saském Švýcarsku na podkladu
historie krajiny

Gedächtnis der Landschaft –
Maßnahmen zur
grenzübergreifenden Entwicklung
der Sächsisch-Böhmischen
Schweiz auf Basis der
Landschaftsgeschichte



Ahoj sousede. Hallo Nachbar.
Interreg V A / 2014 – 2020



Europäische Union. Europäischer
Fonds für regionale Entwicklung.
Evropská unie. Evropský fond pro
regionální rozvoj.

MS 1 – preparatory phase

- Detailed **data retrieval**
- **Existing databases** will be assessed whether they are applicable to this project (data quality, spatial accuracy), especially large-scale historical floristic databases from the region and forest vegetation samples in the surveyed area in 1950/1960.
- The areas suitable for mapping selected and the list of **mapped plant species** is expanded. The focus will be on species that serve as indicators of **abandoned villages** after the Second World War and invasive species.

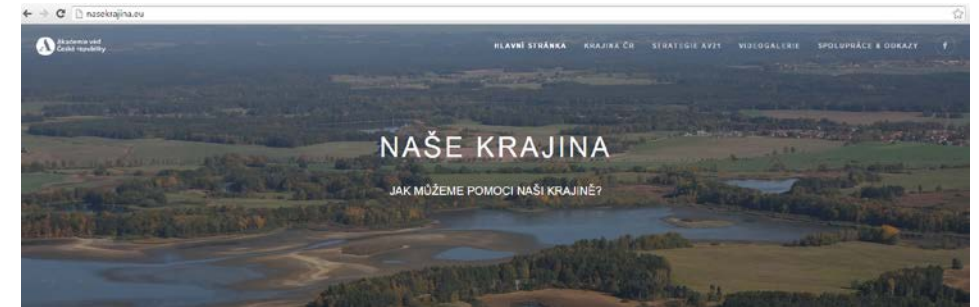
MS 2 – creation of a geodatabase

- **Digital data** processing
- Implementation of mapping results
- In order to create a database related to (project) territory, the **historical databases** retrieved during MS1 will be digitally processed.
- **Species** that respond sensitively to landscape changes (e.g. wetland species) and their proportions (extension of endangered versus invasive species) will be examined. Also, the species of mosses that are evidence of forest continuity will be mapped and evaluated.
- IBOT will support UJEP in digitizing aerial photographs.

MS3 – analysis and implementation of measures

- **Modeling** of the propagation / retreat of species in the open landscape, changes in the occurrence of moss in relation to landscape changes, both on a finer scale for the region and on a broader scale for sub-areas
- Developing appropriate **strategies and measures** (e.g. defining areas with an appropriate management strategy to conserve biodiversity and suppress invasive species)
- Cooperation on the concept of „**Museum in Nature**“
- Statistical connections between the occurrence of **species, species groups** and **species diversity**, on the one hand, and between **changes in the landscape** or its existing structure on the other (new indicators of change due to socio-economic changes).

MS 4 – final phase

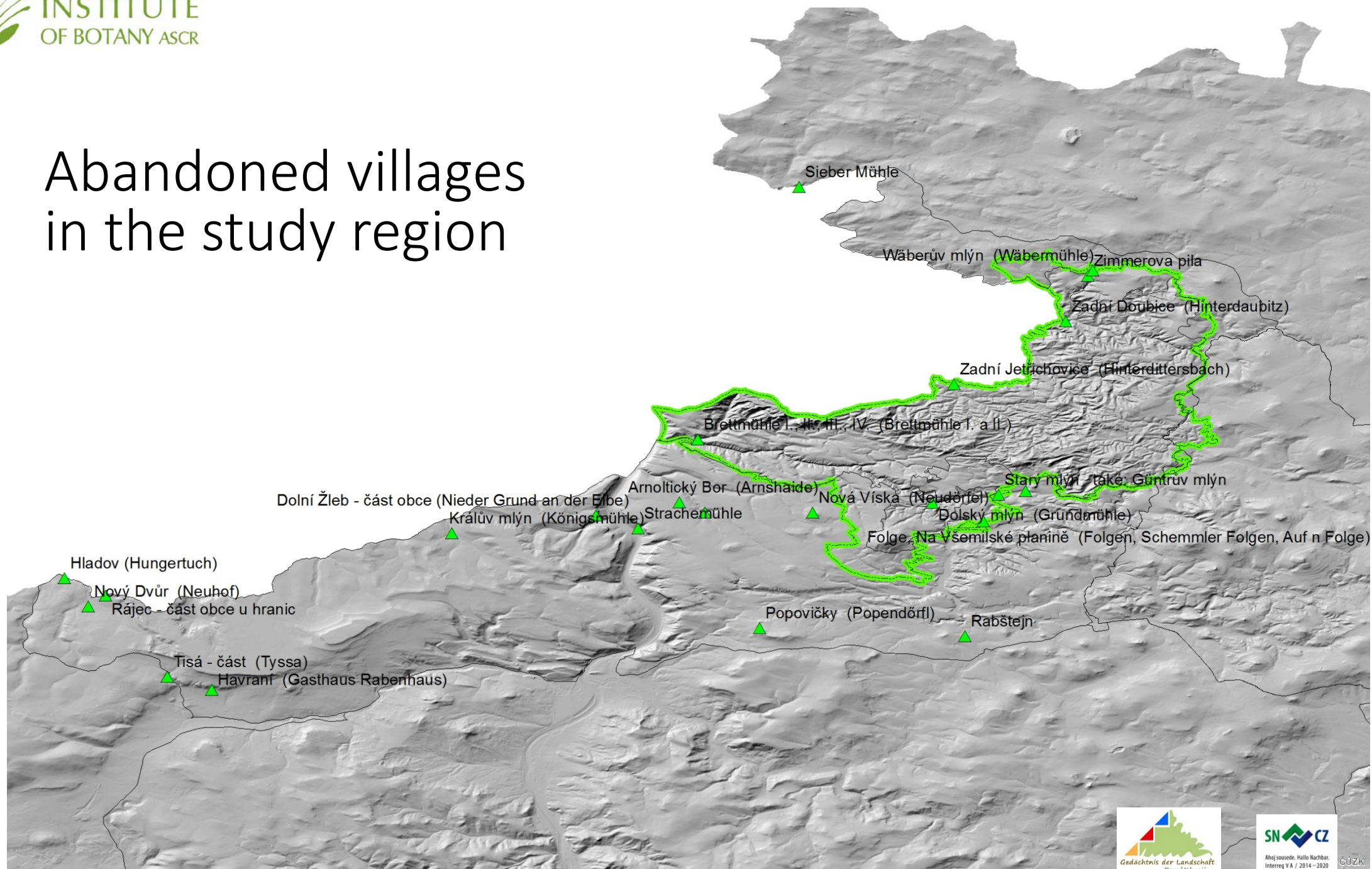


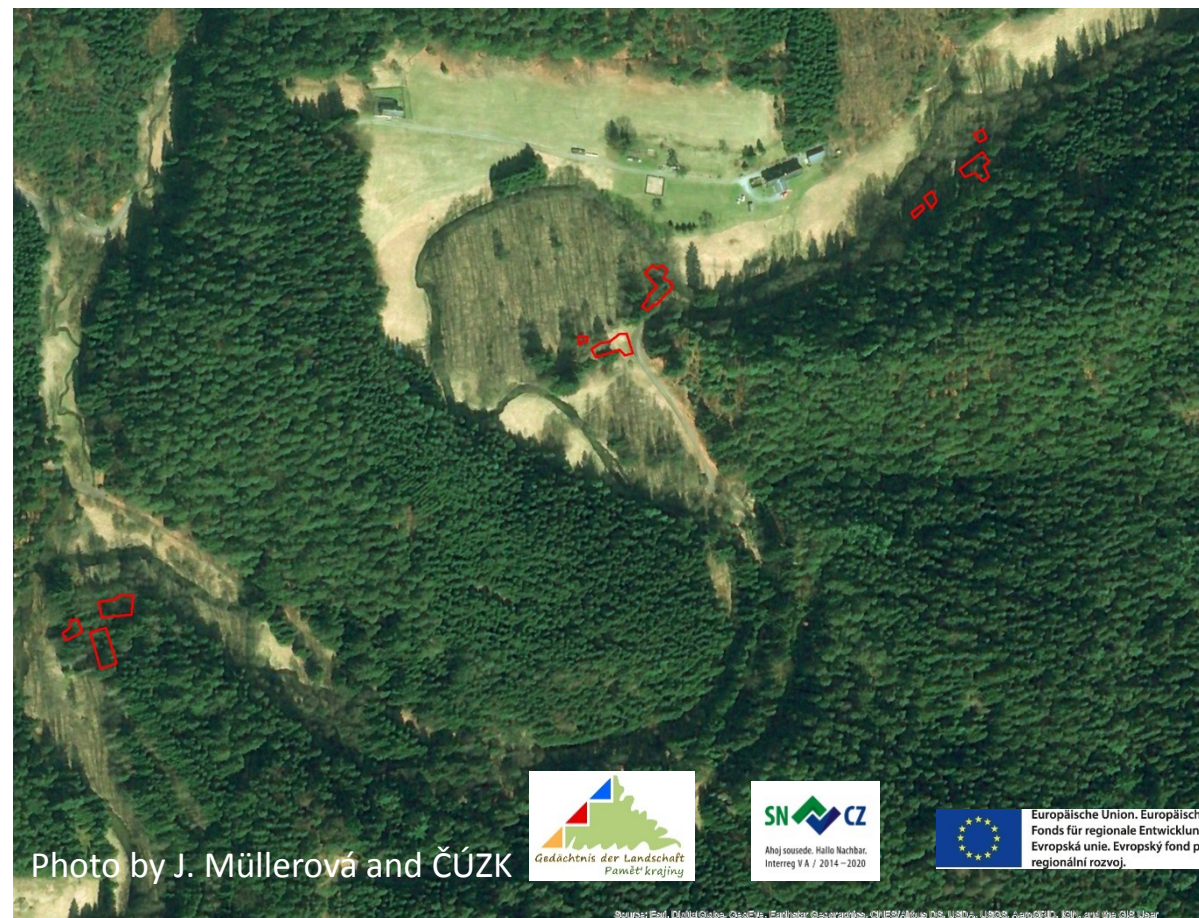
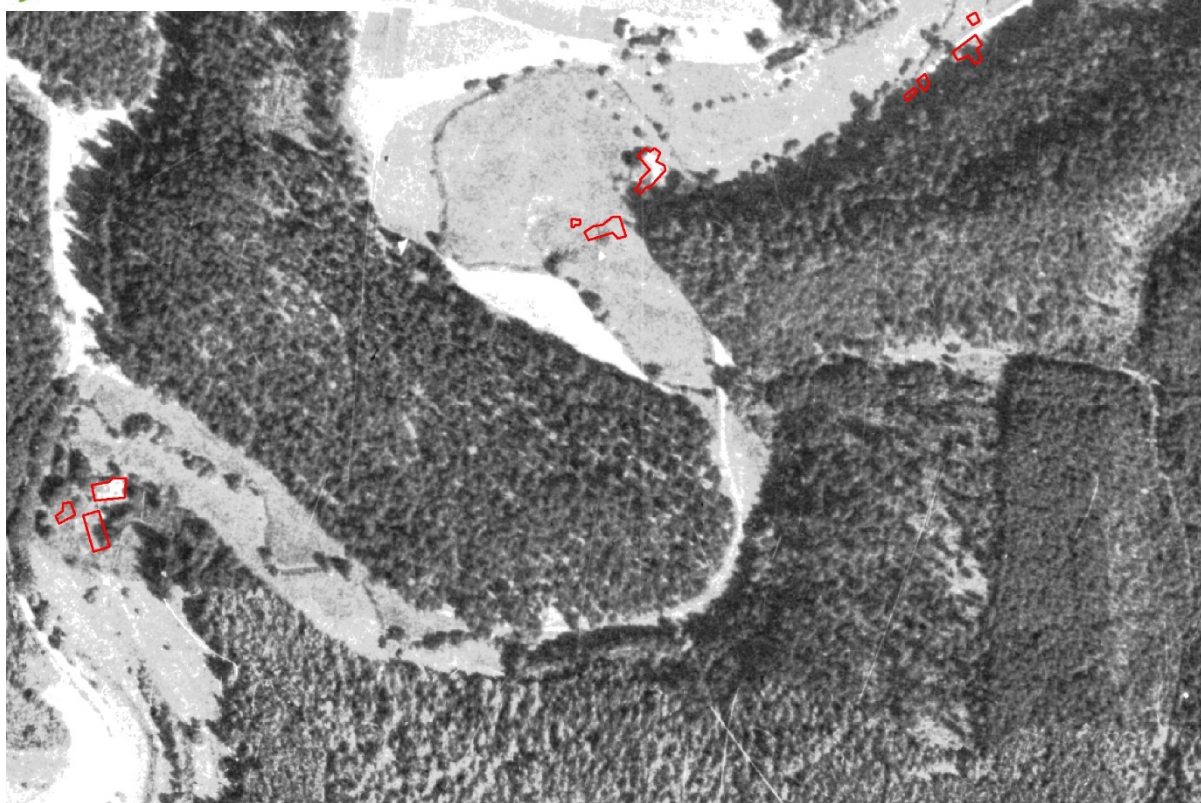
- Mapping and analysis results will be edited and **visualized** for submission.
- Extensions of plant and moss species will be displayed on **maps** and will be documented by a list of coordinates.
- **Papers** on the concepts of strategies and measures on how to deal with aliens, how to protect endangered species, how to preserve species diversity, and implement awareness-raising activities (eg. the "Nature Museum").
- The results will be presented at the **final meeting** and prepared for publication on the project **website** and on the IBOT home page.

Case studies

Abandoned villages

Abandoned villages in the study region



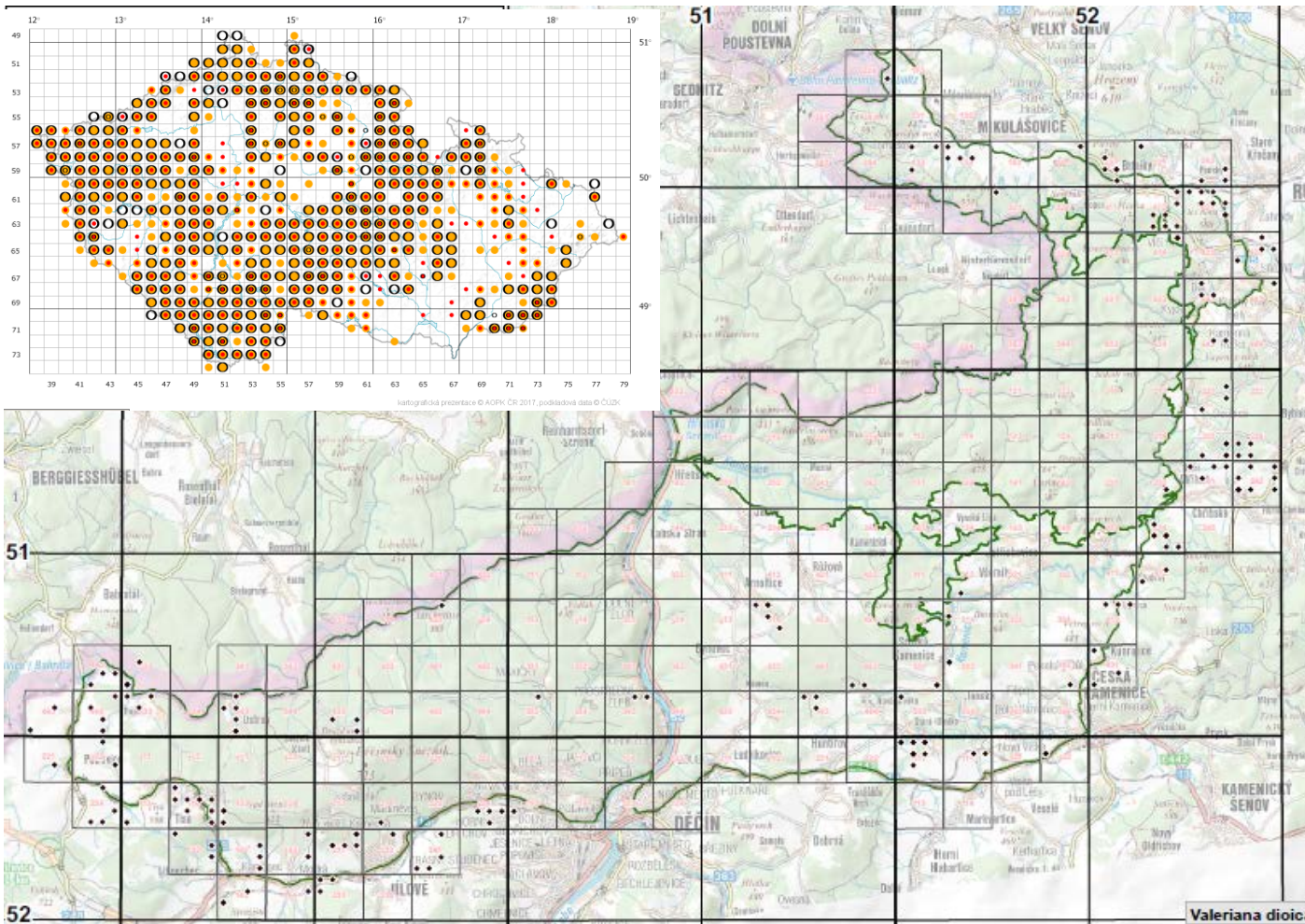


pastures abandoned,
management cessation,
afforestation
some grasslands still
continuous

Case studies

Indicator species

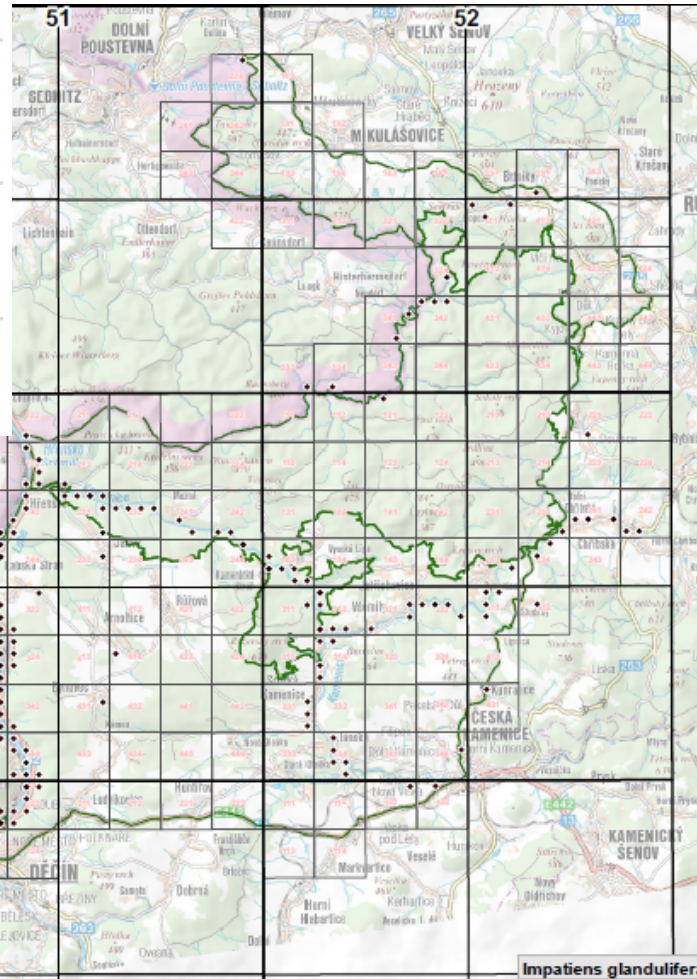
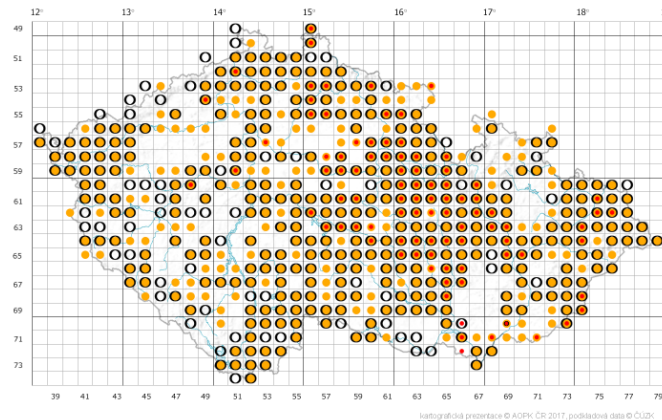
Species indicators



Valeriana dioica – endangered

Distribution maps of study region by H. Härtel, Administration of České Švýcarsko NP, for the CR by AOPK. Photo botany.cz

Species indicators



Impatiens glandulifera – invasive

Distribution maps of study region by H. Härtel, Administration of České Švýcarsko NP, for the CR by AOPK. Photo botany.cz

Endangered/susceptible spp.

- *Arnica montana*
- *Betonica officinalis*
- *Briza media*
- *Carex demissa*
- *Cirsium heterophyllum*
- *Centaurea phrygia* agg.
- *Dactylorhiza majalis*
- *Eriophorum angustifolium*
- *Lathyrus linifolius*
- *Platanthera bifolia* s.l.
- *Polygala vulgaris*
- *Rhinanthus minor*
- *Selinum carvifolia*
- *Silene viscaria*
- *Thymus pulegioides*
- *Valeriana dioica*

Alien and invasive spp.

- *Digitalis purpurea*
- *Heracleum mantegazzianum*
- *Hesperis matronalis*
- *Impatiens glandulifera*
- *Lupinus polyphyllus*
- *Myrrhis odorata*
- *Phalaris arundinacea* cv. *Picta*
- *Pinus strobus*
- *Reynoutria* spp.
- *Robinia pseudacacia*
- *Rudbeckia laciniata*
- *Solidago gigantea*
- *Solidago canadensis*
- *Spiraea salicifolia*
- *Symphoricarpus albus*
- *Syringa vulgaris*
- *Telekia speciosa*
- *Vinca minor*

science-practice-policy

relationship between analyses of landscape change and proposed measures related to invasive and endangered plant species - SCIENCE

- Understanding the **factors affecting survival of species in fragmented landscapes** is among the central issues in both species conservation and invasive ecology.
- In case of endangered species most of recent models relay on metapopulation concept and equilibrium between extinction and colonization. Then we can assess the number of habitats necessary for species survival in the landscape from **present species distribution**. **Changes in number of suitable habitats** thus provide information if the threshold for sufficient number of habitats was not achieved and what is the trend.
- These assumption are also often violated when the colonization process is very slow (e.g. perennial plants) and population survival is based mainly on long-term survival of local population. In such cases the information on **changes in landscape structure** are crucial for identification of **stable habitats/population**.
- In case of alien and invasive species the landscape changes play also crucial role. **Changes in management** (e.g. abandoning) can significantly increase the **habitat invasibility** for perennial aliens. On the other hand the habitats with sustainable management (e.g. mown meadows) are less prone to spread of invasive species.

relationship between analyses of landscape change and proposed measures related to invasive and endangered plant species - PRACTICE

- Certain areas and habitats for endangered plant species will be delineated. **Trend of changes** of such habitats will allow to focus the **management planning**. We will be able to say where it is worth to keep present management and where would be better to change it (e.g. because it was indicate by historical documents as previous original management in the locality).
- Partly the reasoning for endangered species is also valid for **alien species**.
- Given the rough present distribution of alien species is available (but we can improve this knowledge, e.g. for the area of abandoned villages) we can say which localities are **more prone to invasion** (e.g. because of previous changes in management). We can also analyze how is the present distribution of alien species related to previous changes in management/landscape structure and therefore identify which are the **key landscape transformations** responsible for such stay.

Thank you for your attention

and J. Wild, J. Müllerová and H. Härtel for help with presentation