

The potential role of ex situ plant collections in renaturalisation programmes: Ślepiotka river case study

Revitalisation of urban Ślepiotka valley in Katowice – an example of habitat restoration with use of ex-situ collections

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Project areas in
Poland, the
Czech Republic
and Germany



Katowice: Ślepiotka river



Bydgoszcz:
Bydgoszcz Old Canal



Brno: Old Ponávka



Pízen: Junction of
Úslava and Mže



Stuttgart: Feuerbach



Aufbauwerk Leipzig:
Thostgrundbach



Leipzig: Karl-Heine-Canal

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Please also visit Revitalisation of
Urban River Spaces (REURIS) at:
www.reuris.gig.eu

REURIS

Revitalisation of
Urban
River
Spaces

A Project under the



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DEVELOPMENT FUND

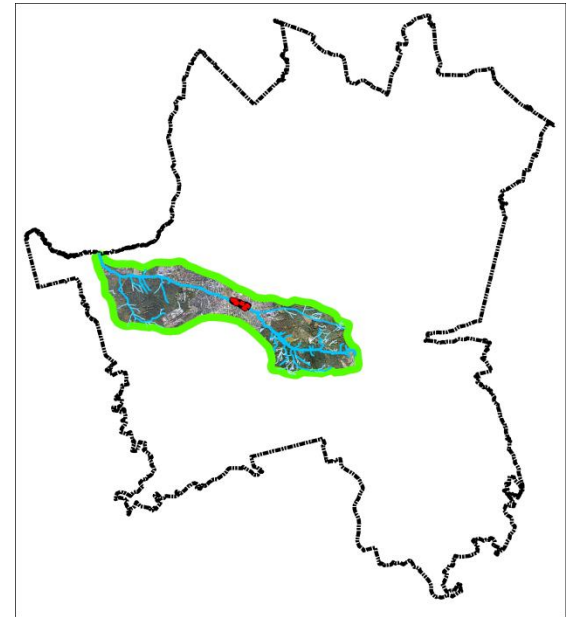
REURIS partners



Pilot actions

- **Valley of Ślepiotka in Katowice – partial renaturalisation of river channel and restoration of local ecological corridor, increase of water retention capacity, improvement of storm-water management, restoration of landscape resources**
- **Bydgoszcz Old Canal – reconstruction of water flow with reference to historical tradition of the place, planting of native trees and shrubs, introducing demonstrative landscape elements, adapting the adjacent area for educational and leisure functions**

Location of Ślepiotka catchment and revitalisation action area in Katowice



The stretch for restoration of river corridor in urbanized area (marked in dark blue) and pilot investment area (in red)

Technical elements of investment in Slepiotka valley





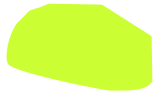
**approach road
accessible for
disabled**



**main approach road
for pedestrian**



**hairpin bend-like
footpath**



**meadow, area for
recreation and
education**



vantage platform



vantage point



footbridge



„ green amphitheatre ”



platform footpath

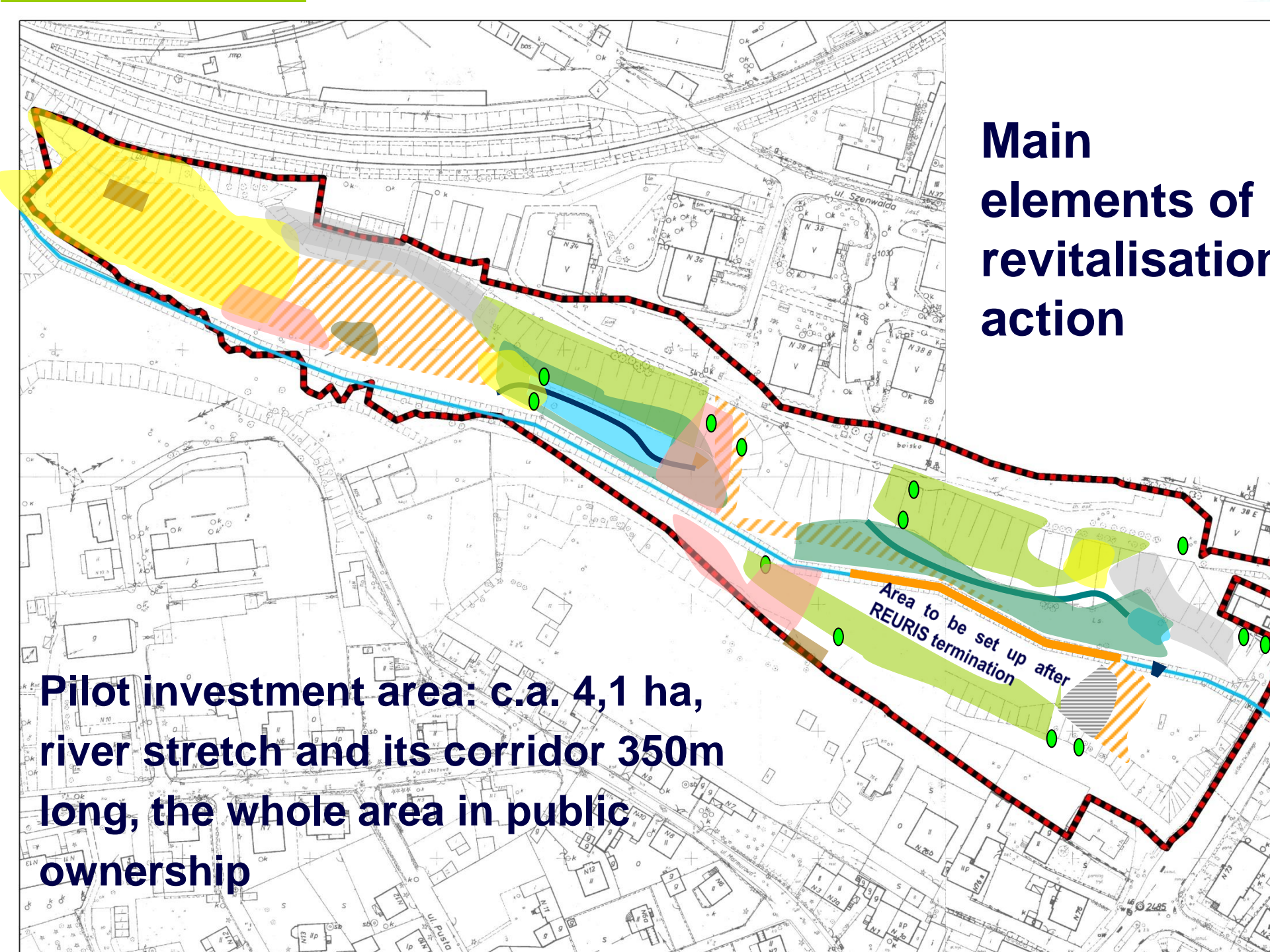


educational path

Main elements of revitalisation action

**Pilot investment area: c.a. 4,1 ha,
river stretch and its corridor 350m
long, the whole area in public
ownership**

Area to be set up after
REURIS termination





stretch of river channel partly renaturalised with use soil bioengineering methods after removal of concrete blocks



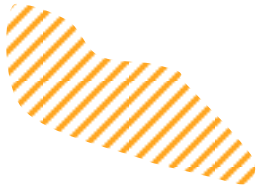
stretch of old channel restored as a dry pond (with intermittent water table)



stretch of old channel restored with permanent sluggish flow channel with hydraulic continuity to groundwater



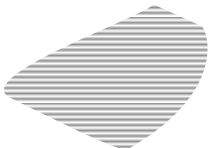
created wetland



area of removal of invasive plant species (*Solidago*, *Reynoutria*, *Impatiens*)



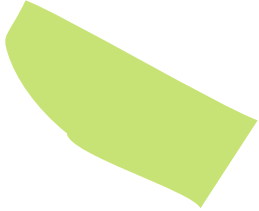
slope prevented from erosion with use of bioengineering methods



collection of old, regional forms of fruit trees (*Cerasus*, *Pyrus*, *Malus*, *Ribes*)



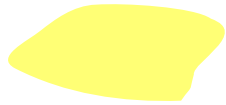
riparian habitats enhanced with bioengineering methods (incl. reintroduction of native plant cover)



dry-ground forest habitat enhanced with bioengineering methods (incl. reintroduction of native plant cover)



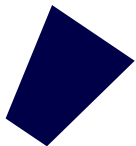
active protection of before existing habitats for protected plants species



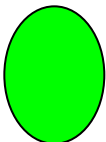
restored flowery meadow habitat



storm water outlet functioning also as drainage of groundwater, rebuilt (retrofitted) with use of natural material (wood, stone)



storm water outlet functioning also as drainage of groundwater, aesthetized without reconstruction (retrofitting)



especially important tree(s) creating landscape amenities

Overall sequence of restoration activities in Ślepiotka valley

- **2009-2010: conception and design of reconstruction activities, based on habitat investigation including detailed analysis of existing plant community, soil investigation and comparative investigation at similar sites in surroundings**
- **July-August 2010: implementation of planting**
- **Starting from 2011: observation and analysis of the results, as well as invasive plant species control measures**













Main results of local community interest:

- **restored stable plant cover with use of native plant species (perennial plants, trees, shrubs);**
- **river channel modified with use of soil bioengineering methods (natural stone, native plant species) for habitat diversity increase and for establishment of buffer-zone protecting river water from contaminants;**
- **created quasi-natural wetland for increase of retention capacity and for water/amphibious habitat creation;**
- **educational path constructed for public access,**
- **increased possibility to manage water in sustainable way, including improvements of existing stormwater effluents as well as hydraulic continuity established between pond and river channel**

Planted material:

- **25 herbaceous species characteristic for riparian forest**
- **25 herbaceous species characteristic for dry-ground forest**
- **13 herbaceous species characteristic for marshes**
- **14 herbaceous species characteristic for ruderal habitats**
- **34 herbaceous species characteristic for meadows**
- **14 species (native forms) of trees and shrubs**
- **in total: 123 plant species: over 12000 specimens of herbaceous plants, 358 specimens of trees and shrubs**
- **in addition: 80 specimens of fruit trees and shrubs (traditional varieties)**



**Squinancy *Galium odoratum*, just before transporting to
Slepiotka valley**

F & W Szendera farm in Suszec



Lady's-mantle *Alchemilla pastoralis*, nearly ready to be planted at Slepiotka site

F & W Szendera farm in Suszec

Under REURIS, restoration of several types of plant communities/biota was initiated in Ślepiotka valley:

- **hay-meadow (*Molinio-Arrhenatheretea* class),**
- **tall herb community *Filipendulo-Geranietum***
- **dry forest (*Tilio-Carpinetum*)**
- **riparian forest (*Alno-Fraxinetum*),**
- **seasonally flooded riparian marshes**
- **xerothermic sward**

Each habitat/community is being initiated with 5-7 characteristic species

Philosophy of habitat restoration activities in relation to planting

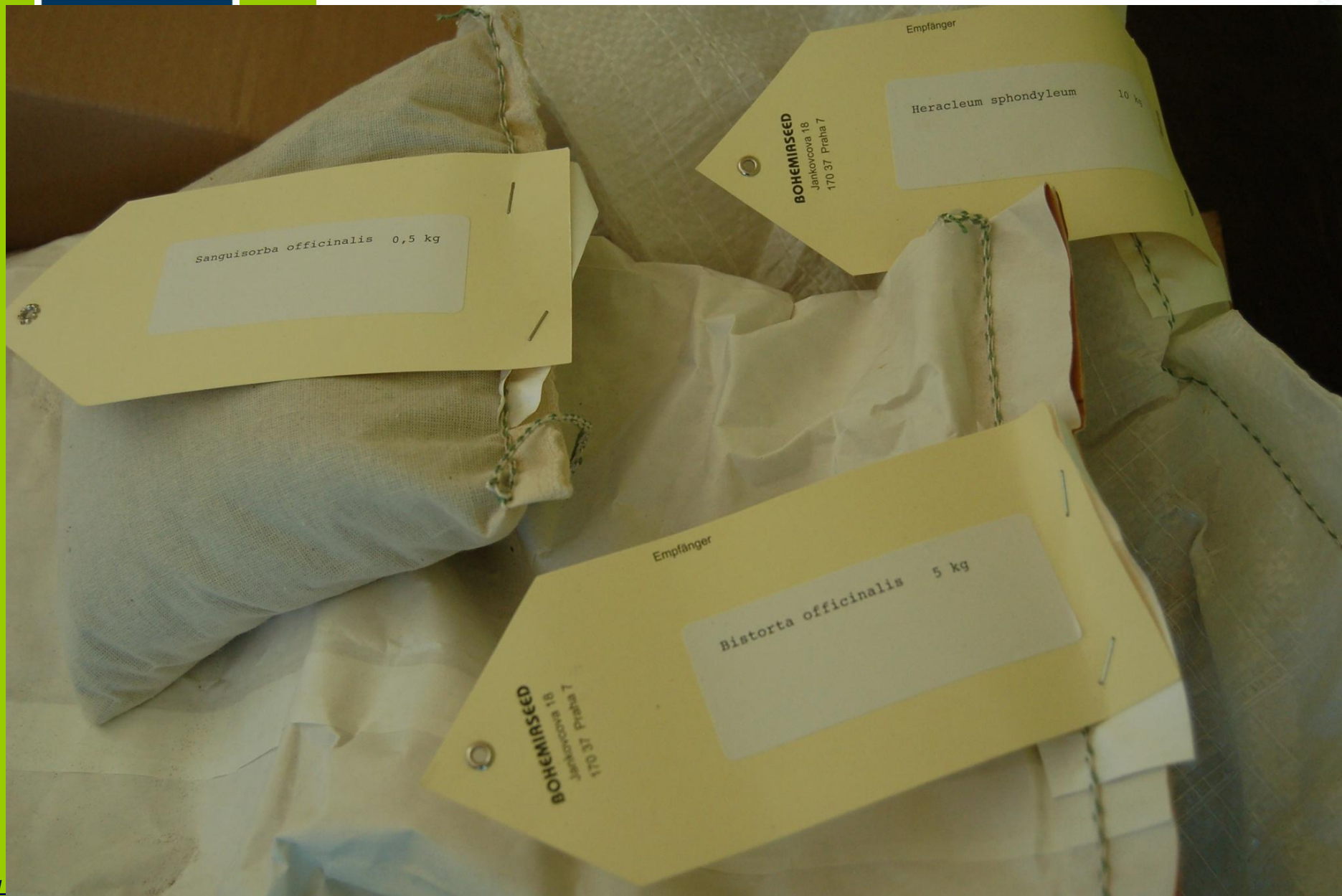
The „metaplantation foothold” method: based on the hypothesis of „least biogeocenosis” based on investigations of T. Kimsa on plant community restoration rules (80s of 20th Century) (not published in English):

- *minimum (treshold) area & count of specimens forming single-species micro-communinity, as well as minimum distance from surrounding micro-communities, sufficient for restoration of degraded plant community;*
- *the treshold parameters depend on a species and on a type of habitat*

Reuris in Slepiotka valley: spacing of plant species and the sequence of planting oriented on creation of single-species micro-communities.

The main source of plant material: seeds from gene banks resources: Silesia (both from Polish and Czech part of the region)

- **The production cycle: 3 years (starting from 2007)**
- **Viability of seeds: 40 to 70%**
- **Almost 16500 seedlings produced in F & W Szendera plant nursery**



Ustroń 22nd May 2011
Conference: Back to Eden
Challenges for Contemporary Gardens

Seeds in big bags, delivered from a seed bank in Czech Republic



Germination: serious challenge, both in case of plant material collected from bank genes and from natural habitats; one of problematic species: meadowsweet *Filipendula ulmaria*

F & W Szendera farm in Suszec

Other sources of plant material for the needs of REURIS:

- Nursery garden at F & W Szendera farm: long-term (many years) storage, multiplication; species characteristic/distinctive for different habitats; in total: more than 50 species, incl. 26 species suitable for restoration of habitats/plant communities occurring in Ślepiotka valley. For REURIS needs: 12 species used, e.g. *Galium odoratum*, *Chrysosplenium alternifolium*, *Dentaria glandulosa*, *Achillea millefolium*, *Acorus calamus*, *Maianthemum bifolium*
- Collecting plants just removed from drainage ditches in result of dredging, with further replacement into nursery garden or, optionally, direct replanting (metaplantation) into target habitats; examples: *Iris pseudacorus*, *Veronica beccabunga*, *Mysosotis palustris*, *Caltha palustris*, *Mercurialis perennis*



**Comfrey *Symphytum tuberosum* and violet *Viola silvatica*
stored and multiplied in nursery garden for the needs of
Slepiotka site restoration**

F & W Szendera farm in Suszec

Other sources of plant material for the needs of REURIS:

- Propagation of plants from seeds, rhizomes, bulbs, stolons, roots occasionally collected from various habitats and from other sources; traditional propagation procedures optimised individual species; in vitro was not in use; examples: (from seeds) - *Lychnis flos-cuculi*, *Filipendula ulmaria*, *Centaurea jacea*, *Centaurea rhenana*, *Polygonum bistorta*, *Valeriana officinalis*,
- Some species, protected or rare in Silesia: transplanted (metaplantation) under commission by Regional Directory of Environmental Protection to substitute habitats: *Platanthera bifolia*, *Dactylorrhiza maialis*, *Comarum palustre*



Production on plant material in foil tunnel, after thinning of seedlings into flower-pots

F & W Szendera farm in Suszec

Other sources of plant material for the needs of REURIS:

- **Some other species, both common and protected ones: replaced from nearest vicinities of revitalisation area, for protection from destruction by land development activities: *Asarum europeum*, *Anemone nemorosa*, *Polygonatum verticillatum*, *Convallaria maialis*, *Lysimachia vulgare*, *Aegopodium podagraria***
- **Seeds for restoration of meadows: offal from meadows, collected from barns in Roczyny (near Andrychów) and Borowa Wieś (near Mikołów)**
- **Na natural forms of trees and shrubs: two nurseries: D. Kudłacik in Andrychow, F & W Szendera in Suszec**
- **Fruit trees: Mr Kostka nurseries in Chudów**

Future perspectives

- **Emerging market, especially in densely populated area of Upper Silesia, for *ex-situ* propagated plant material and, especially for services concerning restoration of habitats and the management of quasi-natural greenery in urban and suburban spaces.**
- **A need for a common system elaboration of *ex-situ* production of plant material and distribution for plant species/communities reintroduction & reinforcement, as well as for habitat restoration and management.**



Nursery garden at F & W Szendera farm in Suszec: plant material for the needs of several habitat creation/restoration projects under implementation in Silesia

Urban Rivers - Vital Spaces

REURIS (Revitalisation of urban river spaces) is dedicated to meeting the growing demand for attractive and accessible watercourses in city areas by developing sustainable river revitalisation tools through transnational cooperation.

The main issue of REURIS is urban river space revitalisation across CE. The complex nature of this issue needs solving many environmental and socio-economic and political challenges. Regardless of the specificity of a given CE city and river, the strategic approach to solving such issues should be subject to common transnational cooperation. Project also includes pilot actions and exchange of experience from pilot investment implementation. [more...](#)



Partners



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News

- 06.04.2011 Newsletter No. 5
- 06.12.2010 Pilot project in Katowice
- 28.10.2010 Newsletter No 4
- 18.10.2010 Partnership for Slepotka
- 11.10.2010 REURIS on Euregia 2010
- 01.10.2010 Project deliverables

Central Europe: Cooperating for success

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Thank you for your attention

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