

H. Pánková (hana.pankova@ibot.cas.cz)¹, M. Šurinová^{1,2}, B. Stojanová¹, V. Zeisek², Z. Münzbergová^{1,2}

1- Institute of Botany of the Czech Academy of Sciences, Průhonice; 2-Department of Botany, Charles University, Prague

Theory: Conservation of endangered species is problematic as their populations are often too small to be able to reproduce. In such a case restoration of habitat is not sufficient for the species rescue and population size must be artificially enhanced. It is, however, important to ensure that the enhanced population will not suffer from loss of fitness due to outbreeding depression.

www.kuricka.cz; www.sandwort.eu



Minuartia smejkalii

- Grows only on serpentine
- Endemic to the Czech Republic
- Critically endangered (IUCN, 92/43/EEC)
- Occurs only on 2 sites
- Only about 500 individuals persist in nature

Aim: to enhance population size by using suitable source of seeds

Methods and results

1 Selection of suitable source of material

Genetic analysis (next RAD sequencing of individuals in the nature)

PCoA

Želivka SCI

Hrnčíře SCI

Individuals from both sites are genetically different, but there is overlap.

Populations
H Z1 Z2 Z3
Z4 Z5 Z6

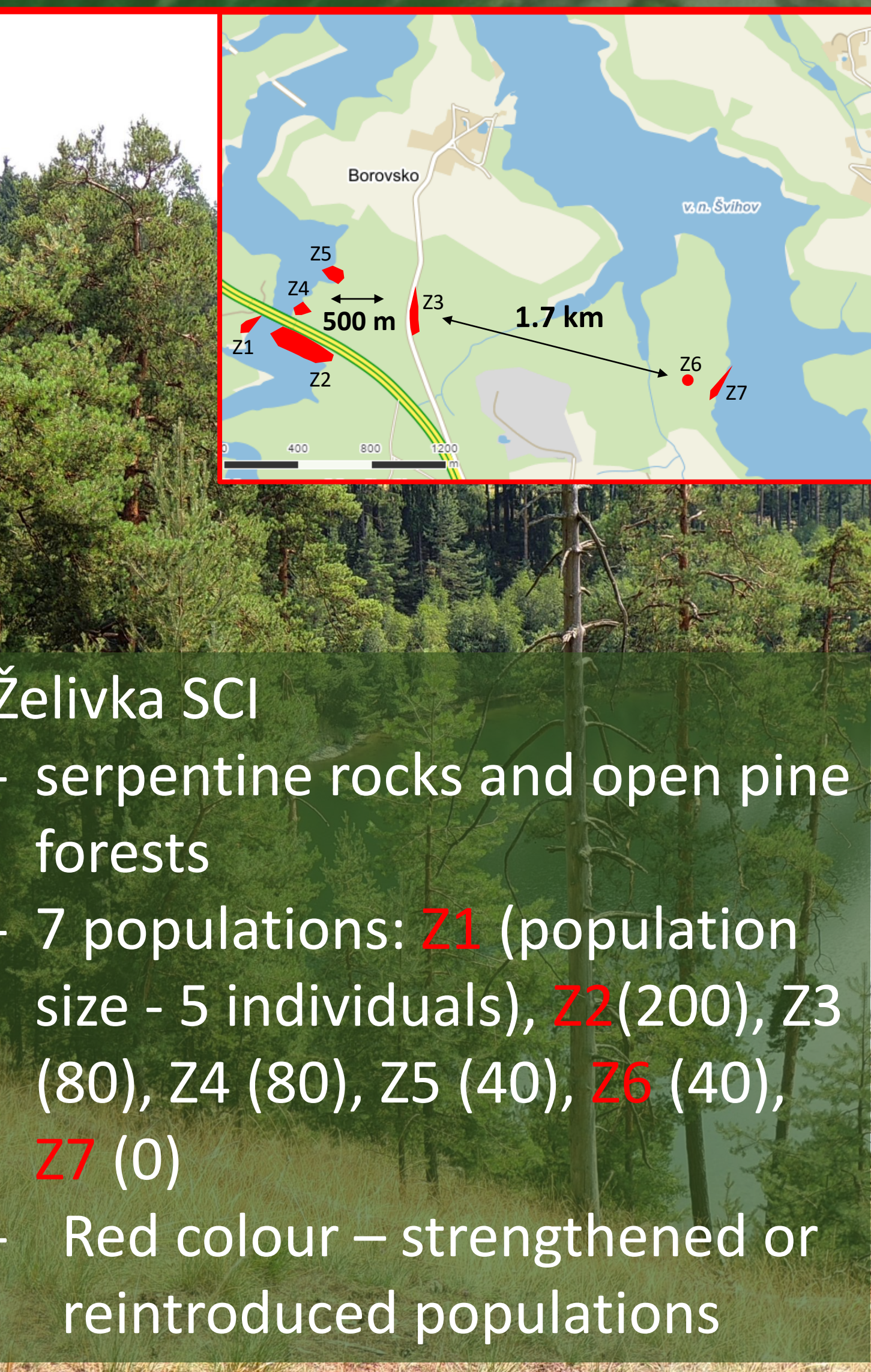
Population within each site may be mixed, but the benefit is not certain

2. Strengthening of populations

- Current populations – individuals obtained from native seeds x reintroduction – seeds from different populations
- Transplantation of juvenile plants in 2007 and/or 2008
- Measurement of plant size prior transplantation
- Annual monitoring of survival and size

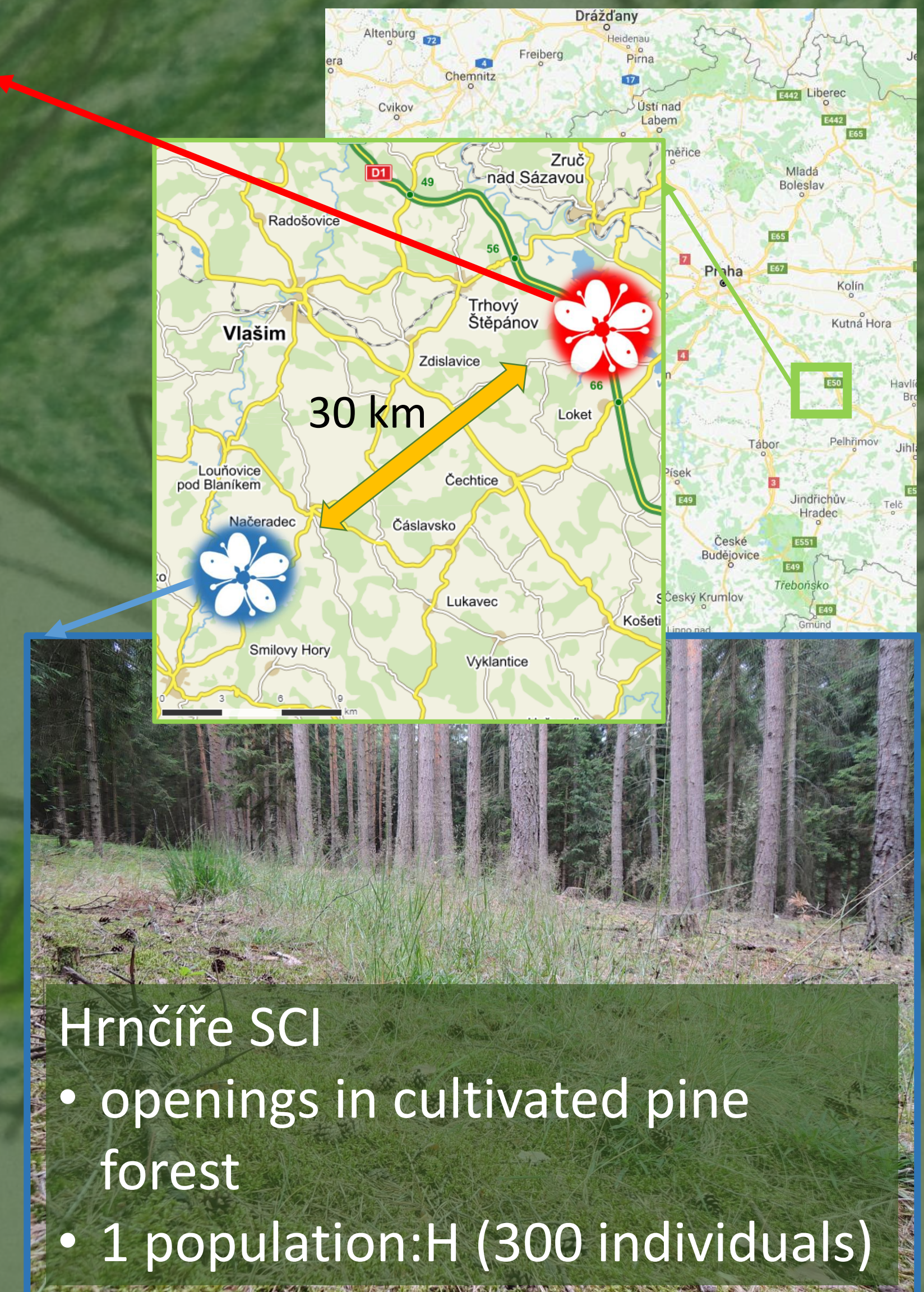


| Popula tion | Nb. of transpla nted plants | Survival (%) | | Flowering individuals (%) | |
|----------------|-----------------------------------|--------------|-------------|------------------------------|-------------|
| | | 1st year | 2nd year | 1st year | 2nd year |
| Z1 | 166 | 76.6 | 77.6 | 97.8 | 93.9 |
| Z2 | 170 | 75.7 | 64.1 | 88.6 | 97.8 |
| Z6 | 247 | 72.7 | 77.0 | 100.0 | 94.8 |
| Z7 | 1476 | x | 58.6 | x | 96.4 |



Želivka SCI

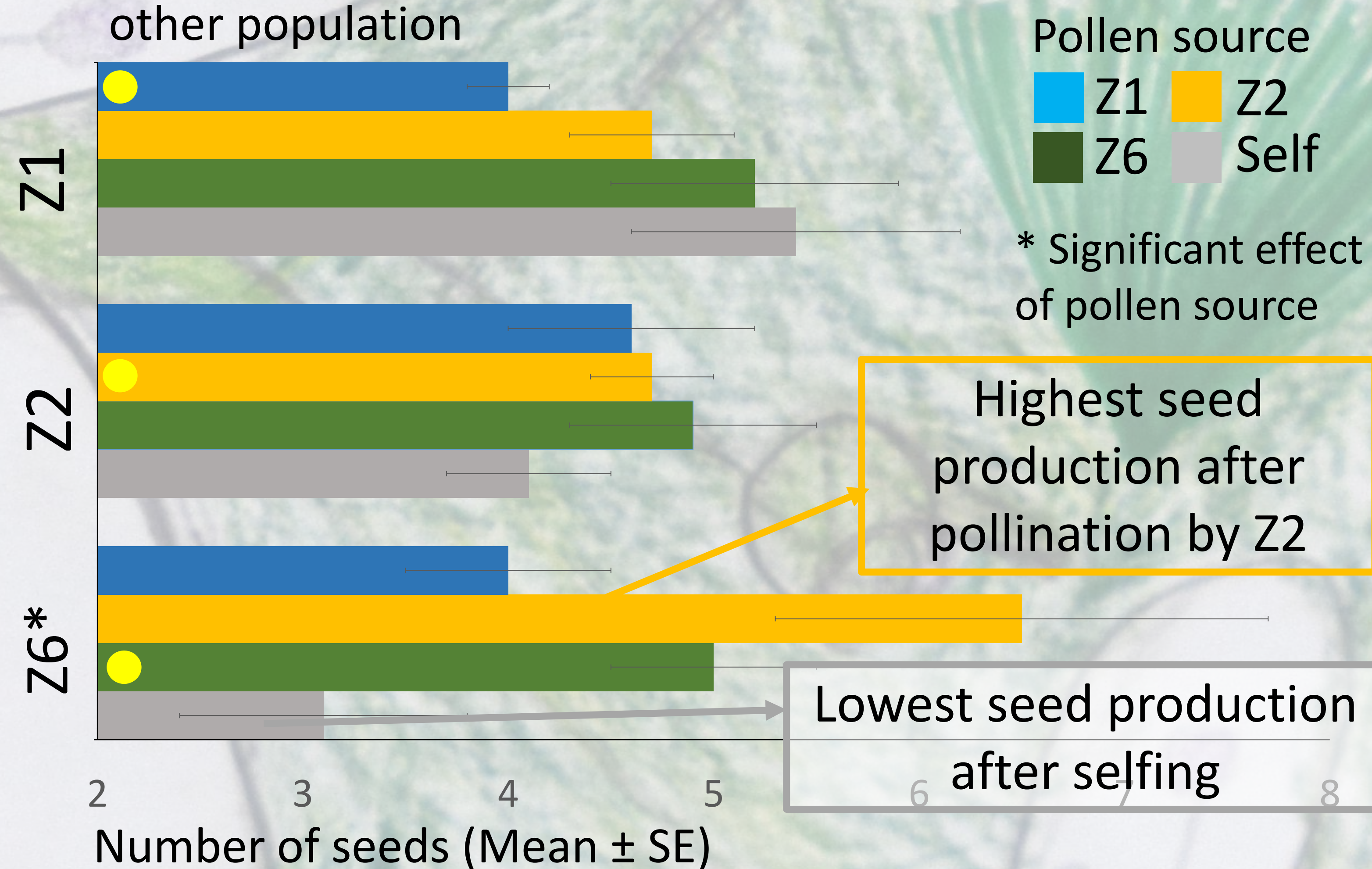
- serpentine rocks and open pine forests
- 7 populations: Z1 (population size - 5 individuals), Z2 (200), Z3 (80), Z4 (80), Z5 (40), Z6 (40), Z7 (0)
- Red colour – strengthened or reintroduced populations



Hrnčíře SCI

- openings in cultivated pine forest
- 1 population:H (300 individuals)

Hybridization greenhouse experiment: pollination of mother plants by pollen from the same individual, other individual from the same population (marked ●) or from other population



Conclusions

- Survival rate of transplanted plants is high, but differed between population in the second year
- Majority of individuals is flowering and populations start to reproduce



New generation of plants on reinforced population Z6