

Evaluation of calcareous grasslands restoration success: density and reproductive success of specialist species.



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Introduction

Calcareous grasslands are often considered as local biodiversity hotspots with regards to their original plant communities. Unfortunately, those habitats have undergone a drastic fragmentation in Europe since the end of the 19th century. This seriously affects populations and their dynamics. To face this, ecological restoration projects took place since the beginning of the 20th century in order to restore large habitat surfaces (LIFE projects). Those created patches, may offer opportunities of extension for species evolving in fragmented landscapes. In a context of growing human's perturbations, study if species are able to colonize newly created habitats and to develop viable populations is crucial in order to evaluate the potential persistence of populations in human driven landscape or the effectiveness of restoration projects.



Objectives – Material and methods

Objective : To evaluate calcareous grasslands restoration success by a population approach.

→ 3 specialist species: *Sanguisorba minor*, *Potentilla neumanniana* and *Hippocrepis comosa*.

3 questions:

- Is species **frequency** different on restored and reference calcareous grasslands?
- Are **reproductive success** traits of restored populations lower than those of reference populations?
- Can potential differences observed in individual's reproductive success traits be explained by **their environment** (soil depth, bare soil, litter, herbaceous and shrub cover)?

Study region: Viroin valley (Caléstienne - southern Belgium)

For each species : 3 sites - 3 parcels/site – 20 individuals/parcels

- (1) reference grassland,
- (2) anciently restored grassland (about 1990 or 2000),
- (3) recently restored grassland (2004 to 2006).

Study species



Sanguisorba minor



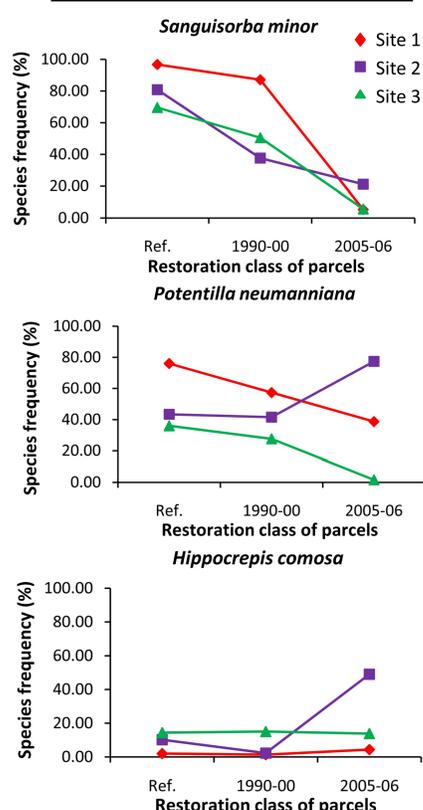
Potentilla neumanniana



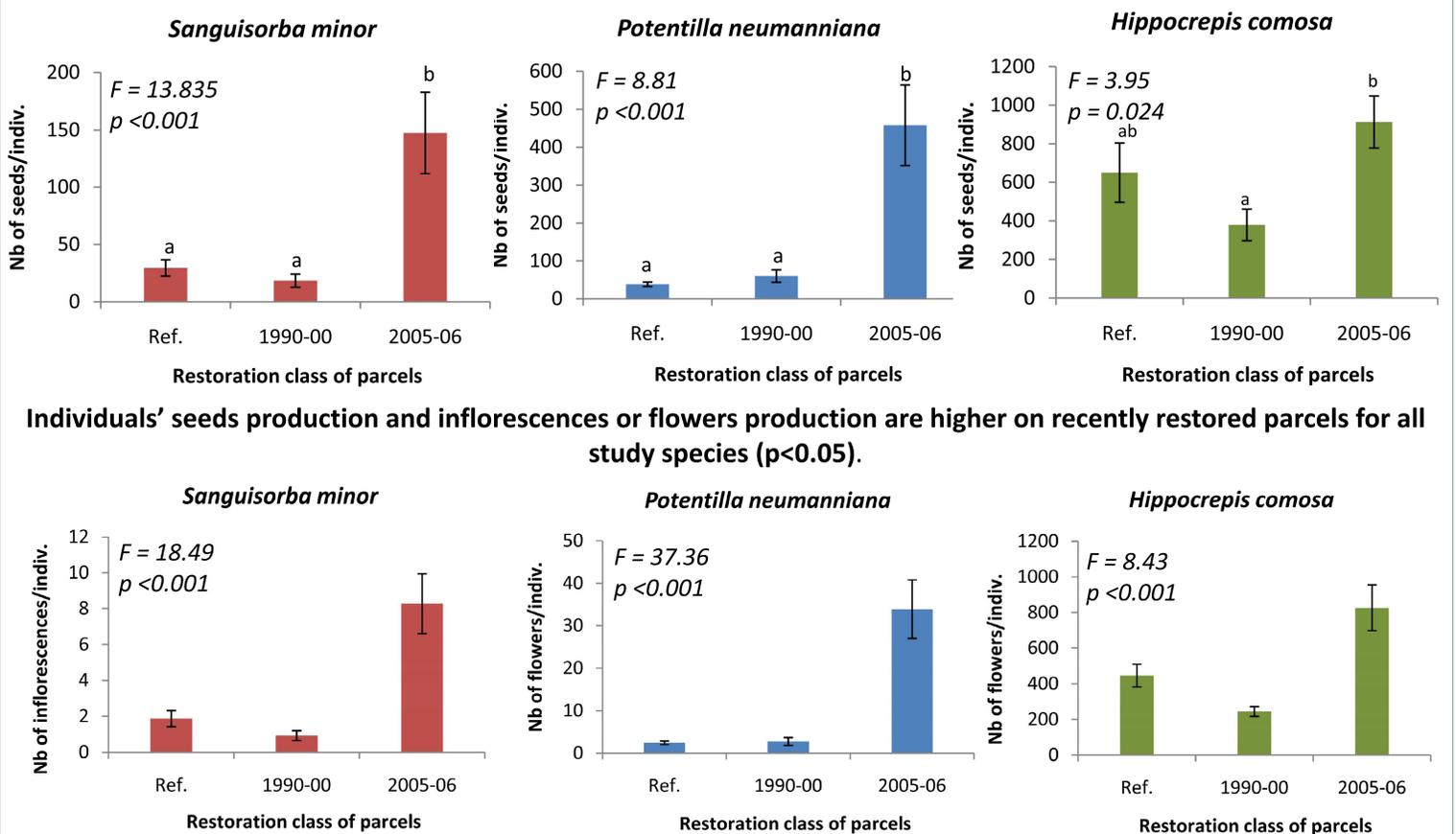
Hippocrepis comosa

Results

Species frequency on parcels



Reproductive success traits



Environment

Environmental parameters differ between parcels : ACP shown that recently restored parcels are characterized by **more bare soil and less shrub cover**. Study species seem to produced **more seeds on opened parcels**. Results are less clear for *Hippocrepis comosa*.

Apart from on the recently restored parcel of the 2nd site, the two first study species are **less present on restored parcels**. *Hippocrepis comosa* is globally less present on study sites.

Conclusion

Fragmented populations seems to be able to reach restored habitat. Moreover, restored environment is promoting reproductive success traits of new created populations. That could be of major importance for the persistence of species in a human driven environment. Moreover, this poses questions about the effectiveness of management on reference grasslands that have remain fragmented during decades.