


Sensitivity of wild plants to climate change

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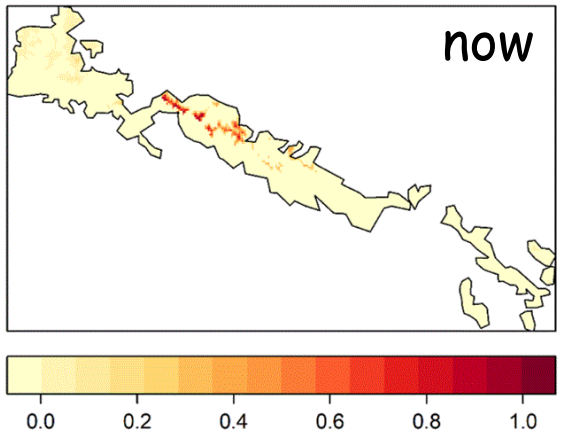
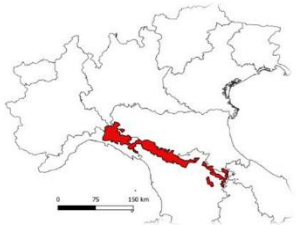
Application of Species Distribution Models (SDMs) to native species of conservation interest

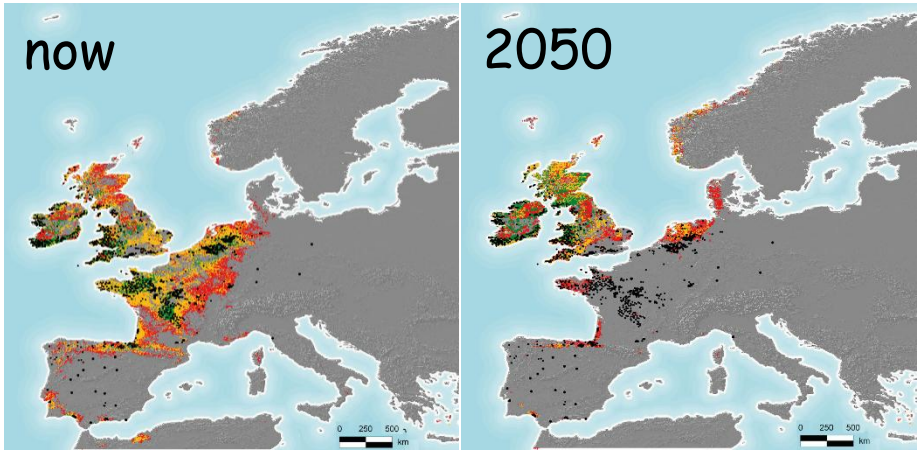
Primula apennina Widmer





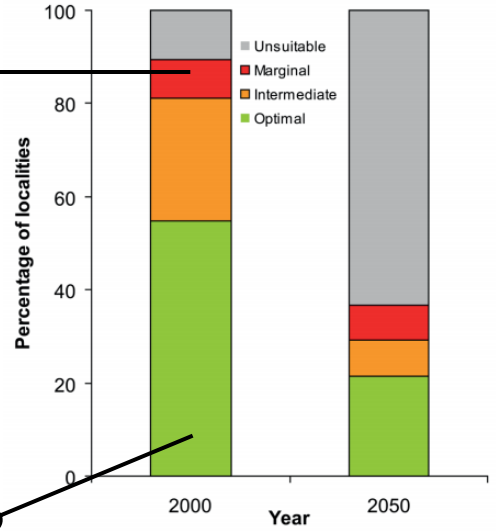
Extinction !!!

Hypericum elodes L.

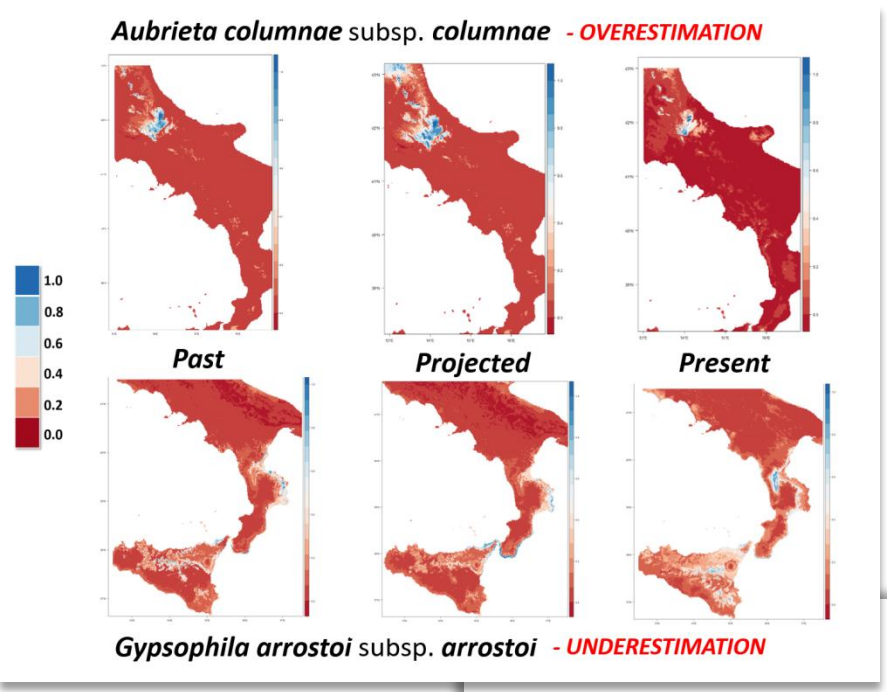


Marginal localities
(ex-situ conservation)

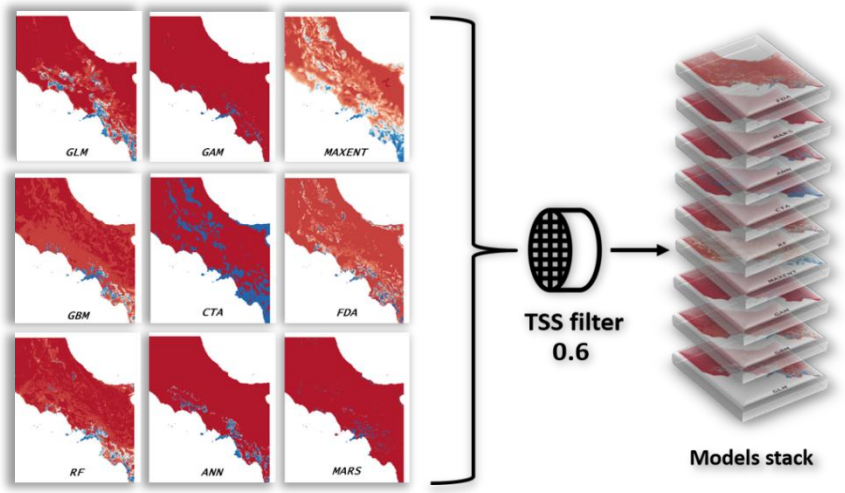
Core localities
(in-situ conservation)

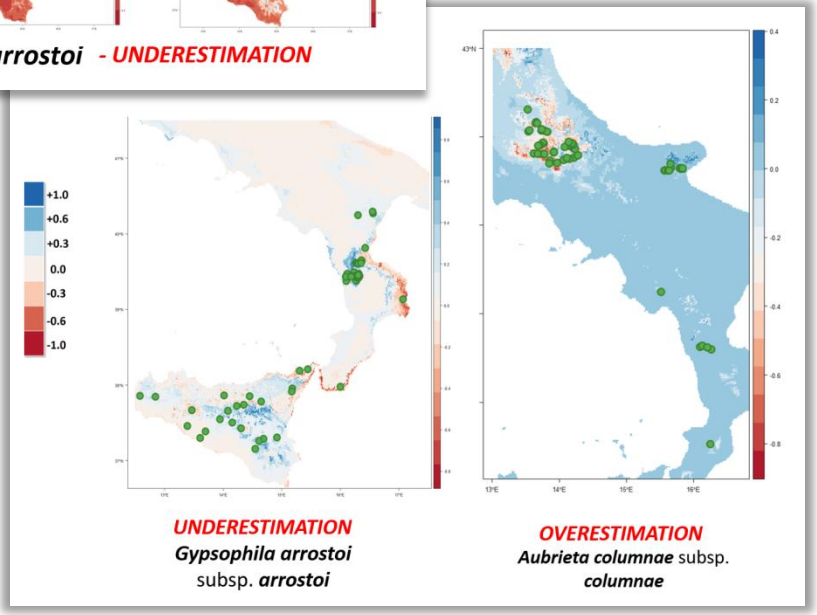


Evaluation of SDMs temporal projection



Ensembled models through Biomod2 R package





Stenoecious species

↓

Overestimation?

Euryecious species

↓

Underestimation?

Association between regenerative (seed ecology) stages and climate

species-specific cues

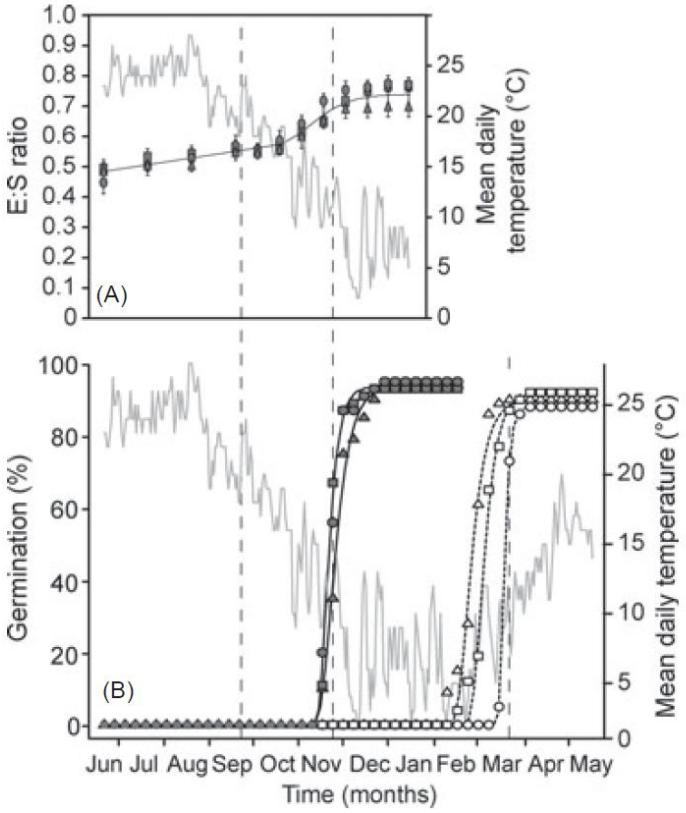


Fig. 1. Embryo growth, radicle and seedling emergence outdoors of the tetraploid cytotype of *Crocus neapolitanus* (circles), *C. etruscus* (squares) and *C. ilvensis* (triangles). (A) Average E:S ratio ± SE (n = 20). (B) Cumulative radicle emergence percentage curves (filled symbols), and cumulative seedling emergence curves (open symbols) fitted using the Weibull function. Grey lines indicate mean daily temperature.

intra-specific (population) cues

Hypericum elodes L.

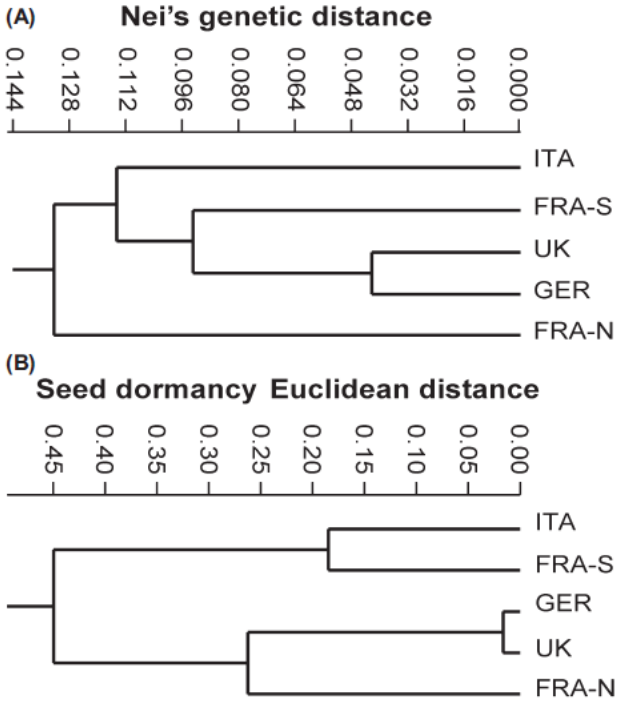


Table 4. Generalised linear model (GLM) results, for the effect of the climatic variables and cold stratification on seed germination (degree of dormancy). Akaike information criterion (AIC): 199; Bayesian information criterion (BIC): 204; logLik: -95; deviance: 78.

effects	estimate	SE	z-value	Pr(>|z|)
intercept	−8.7981	0.4635	−18.982	<0.001
cold stratification	0.1836	0.0087	21.100	<0.001
summer temperature	0.3879	0.0275	14.097	<0.001
winter precipitation	0.0018	0.0006	2.816	<0.01

Climate change and plant evolution

cold climate (glaciations)

↓

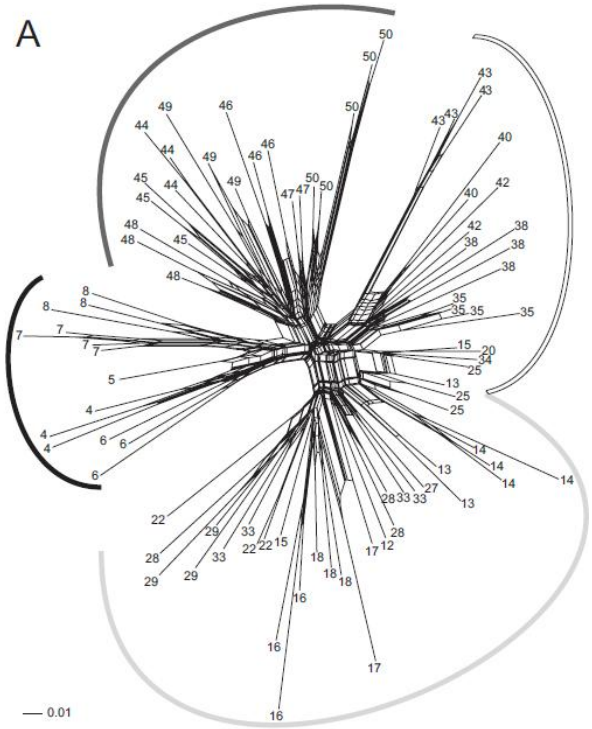
southwards migration

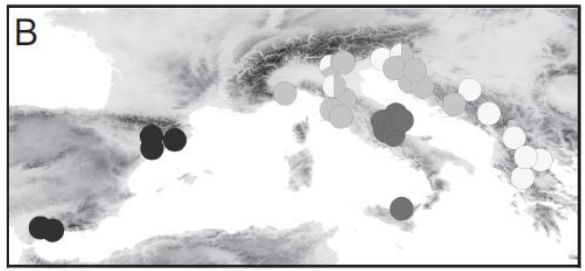
dry climate

↓

open habitats

***Euphorbia verrucosa* L. alliance**

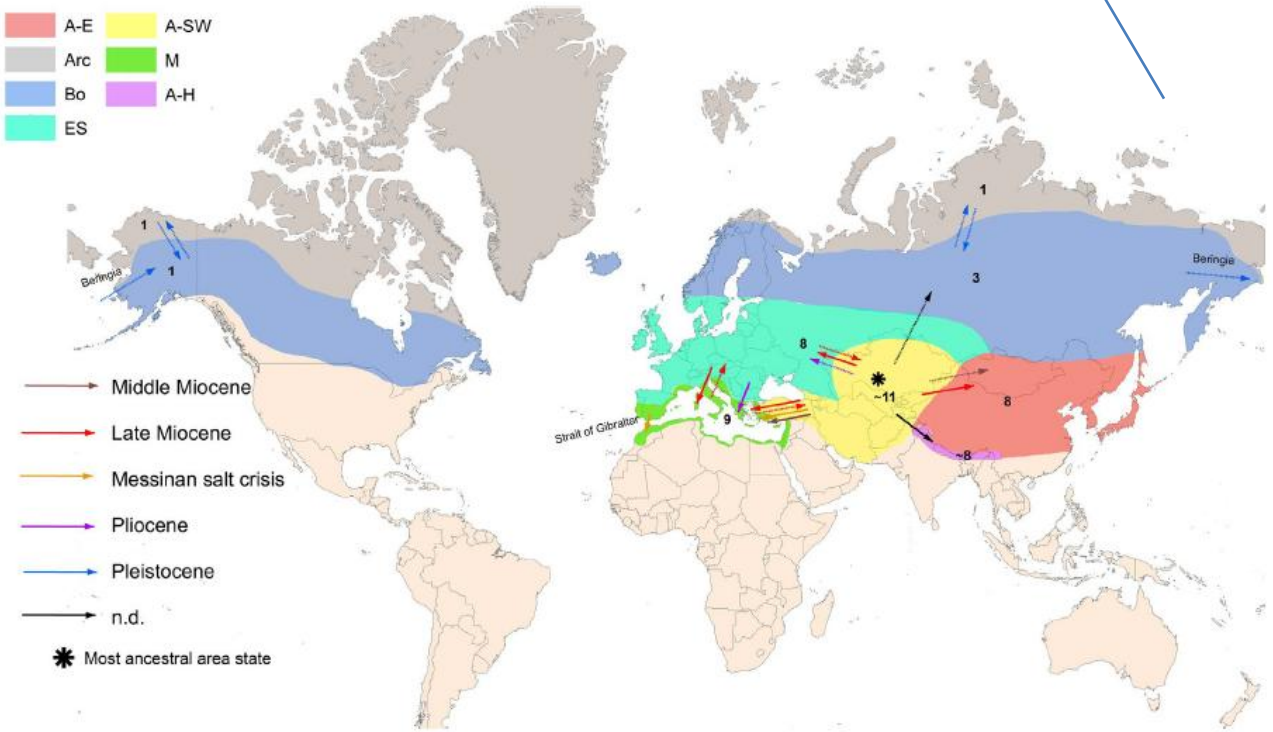




Pleistocene refugia in the three main S European peninsulae

pre-Miocene origin in Irano-Turanian region

***Gagea* (the largest genus in Liliaceae, ca. 300 species)**



Vegetative functional response of plants to climate

SLA

(Specific Leaf Area)

CH

(Canopy Height)

PFT

(Plant Functional Types)

SM (Seed Mass)