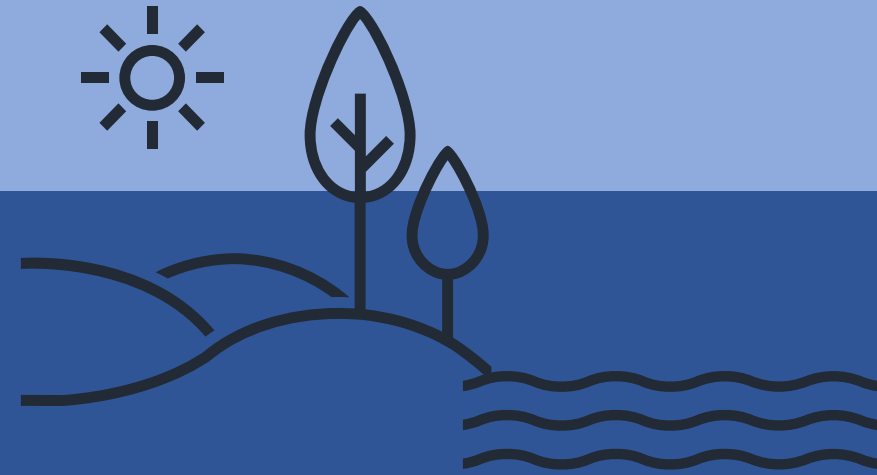
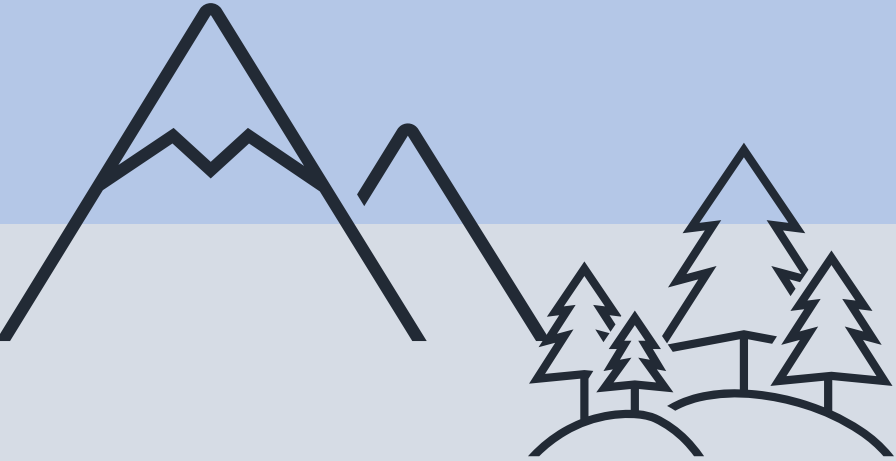


Flowering time variation in *Linum bienne* Mill.



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What is *Linum bienne* and why do we study it?

Linum bienne is:

An herbaceous species found across the Mediterranean basin, the Atlantic coasts of Europe, Ireland, and the British Isles

The ancestor and wild relative of cultivated flax and linseed (*Linum usitatissimum* L.), domesticated around 8000 years ago in Turkey

We study it because:

It can be used to answer ecological and evolutionary questions given the variety of habitats it occupies

Its phenotypic variability is poorly described across its distribution despite it being important for flax improvement

Ecological and evolutionary questions

Questions I am interested in:

What shapes variation in flowering time and life-history across the range of a species?

Is this variation potentially useful to respond and adapt to changes in the environment?

How to answer them:

Linum bienne as a model species

Describe the species genetic structure and variation in flowering time across its native range

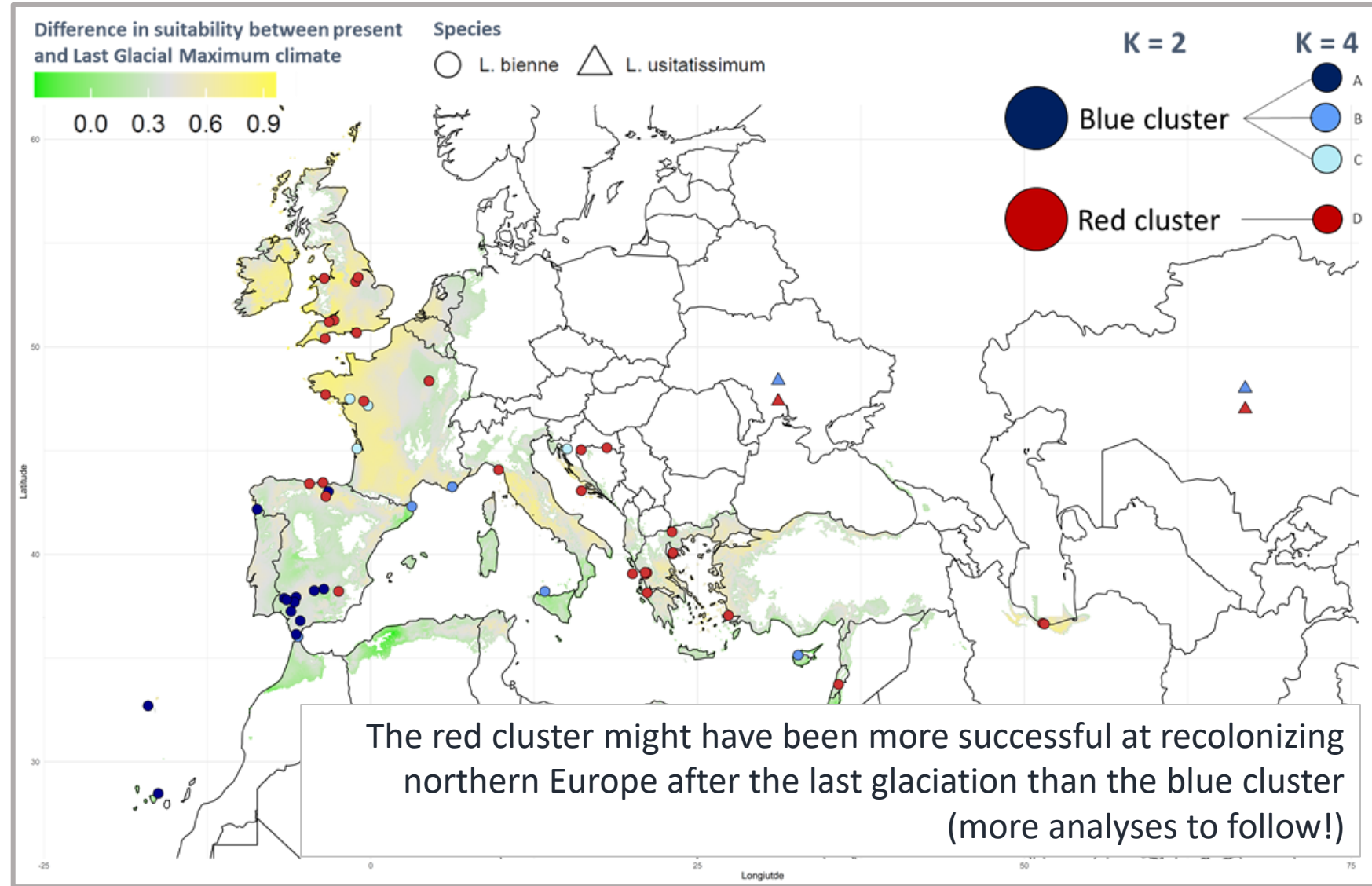
Investigate whether this variation can be adaptive by exposing plants to different environmental conditions

L. bienne genetic structure

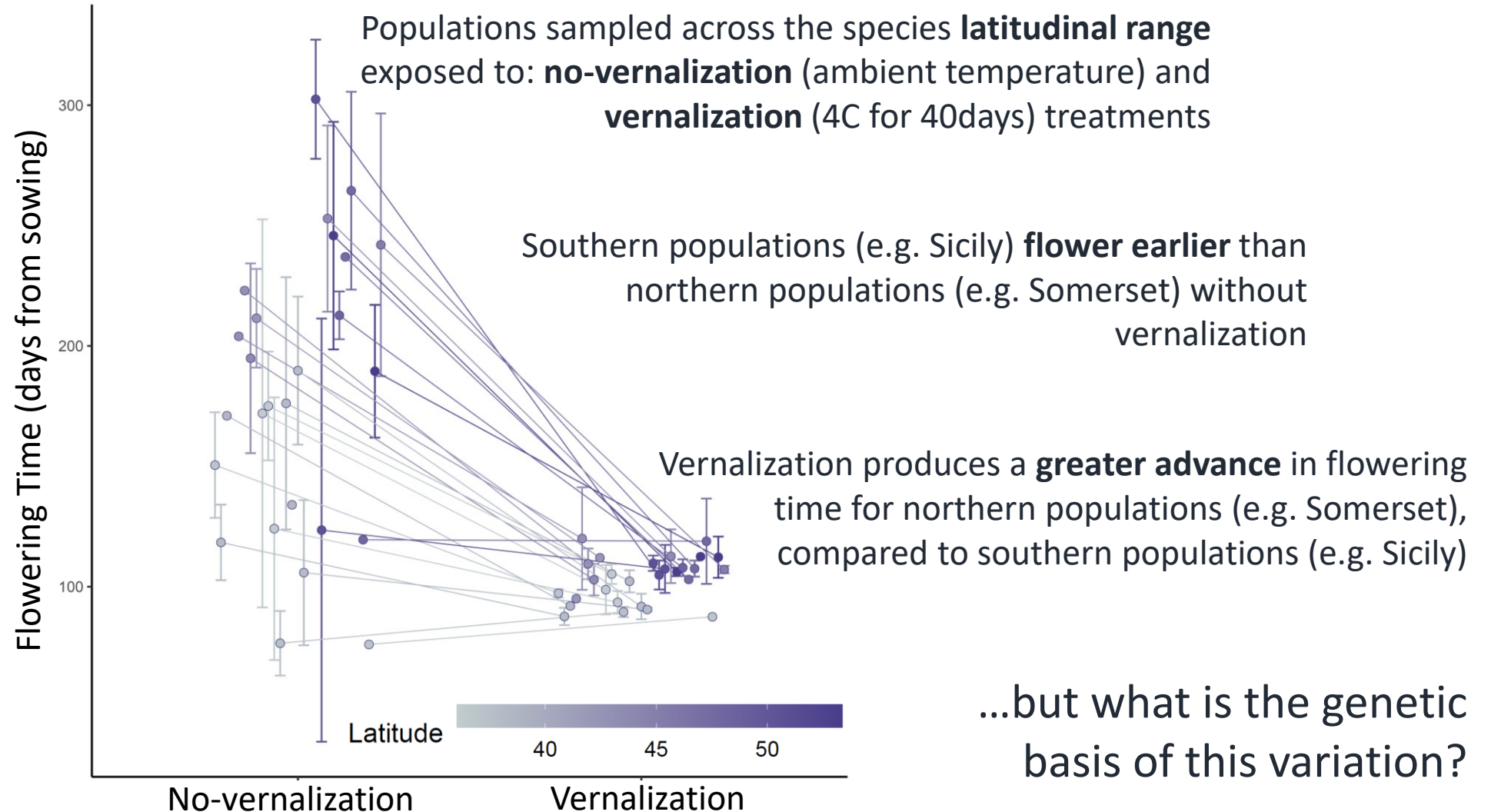
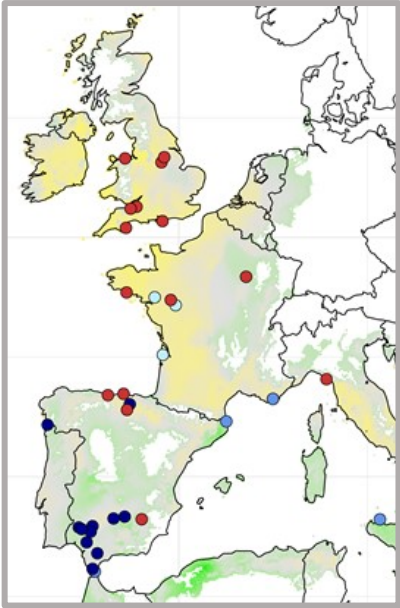
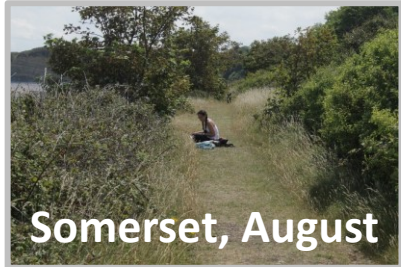
Points represent populations of *L. bienne* that were sampled to cover its native range

Red/blue represent major population genetic groups found in *L. bienne* based on chloroplast DNA

Background colors represent whether environment was more suitable for *L. bienne* during last glaciation (green) or nowadays (yellow)



Flowering time variation in *L. bienne*




Flowering time variation in *L. bienne*

...but what is the genetic basis of this variation?

Data produced, but not yet analysed, for:

1. Sequencing of **flowering gene (TFL1)** known to delay flowering in flax across the whole of *L. bienne* native range (for more info about how the gene works in flax, see Gutaker et al., 2019)
2. Sequencing of *L. bienne* genome and **identification of genomic regions** that are potentially responsible for flowering time control



This work was possible thanks to BSBI that funded the sequencing of the flowering gene

Is variation in flowering time adaptive?



Populations sampled across the species **latitudinal range** grown at 3 locations across the range (Sevilla, Portsmouth, Durham) to test for local adaptation (Is the fitness of populations higher when they are closer to home? And does this depend on flowering time?)



Populations sampled from **Atlantic and Mediterranean** environments exposed to **drought** to test whether variation in flowering time can be a resource to reproduce and persist in stressful environments

More to come!

Thanks to...

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