Temperature manipulations alter growth but facilitation effects in an alpine cushion species

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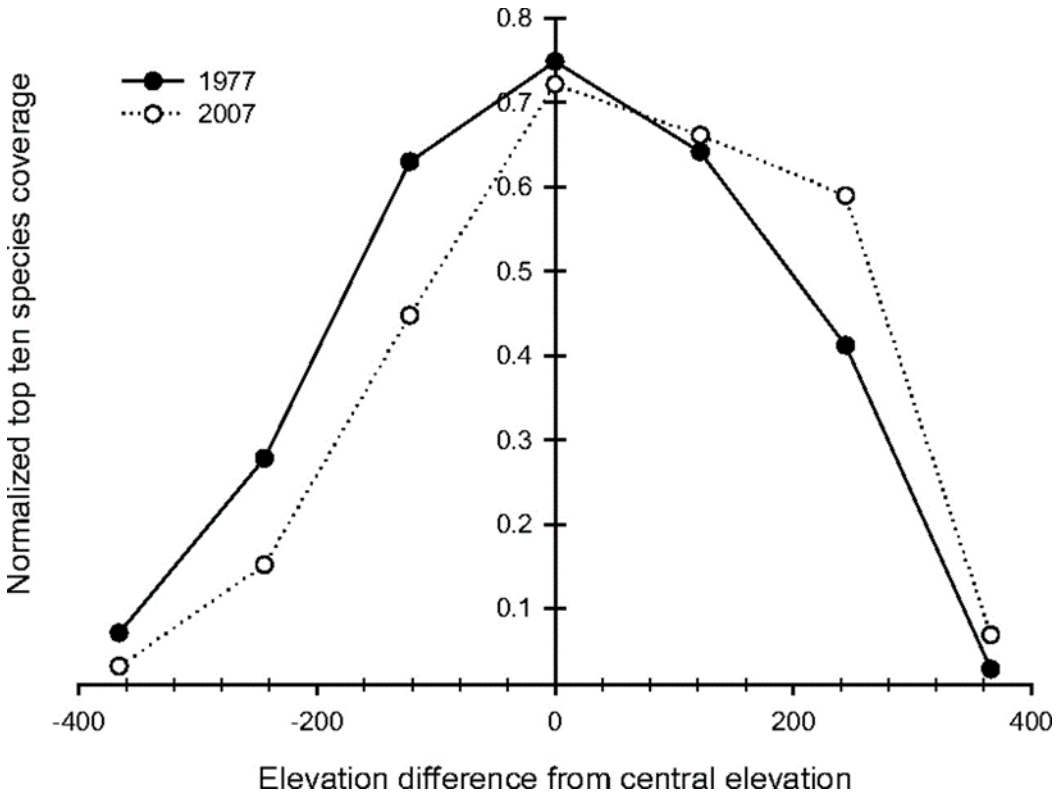
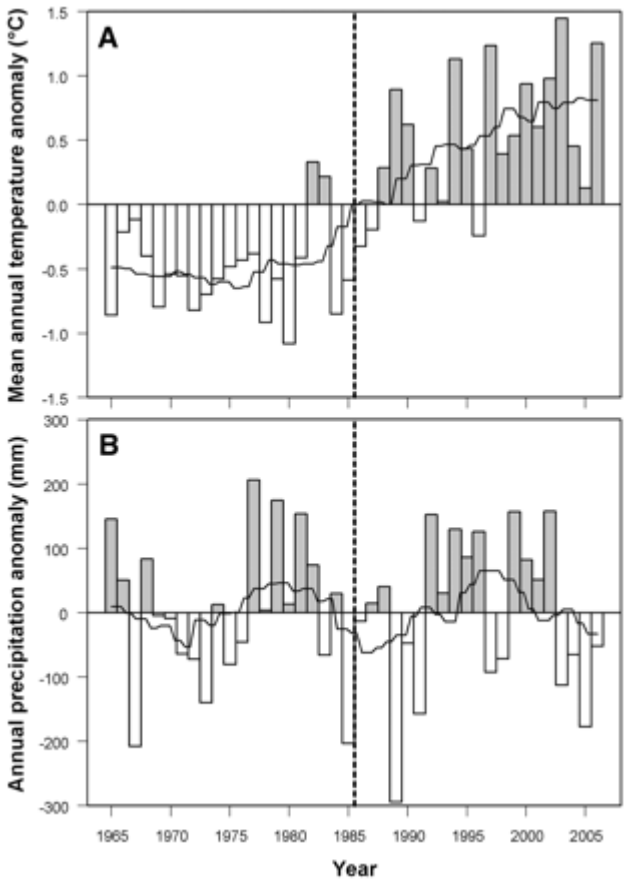
Climate change is influencing species distribution



Kelly and Goulden 2008

Temperature increases are most pronounced in alpine habitats



Lenoir et al. 2008

Climate change may have profound effects on alpine species and habitats

Objective

To test the effects of changes expected for Mediterranean mountains on plant growth and interactions

Using a cushion plant species

Arenaria tetraquetra

We hypothesised that

1) Warming would increase physiological rates, leading to greater cushion growth

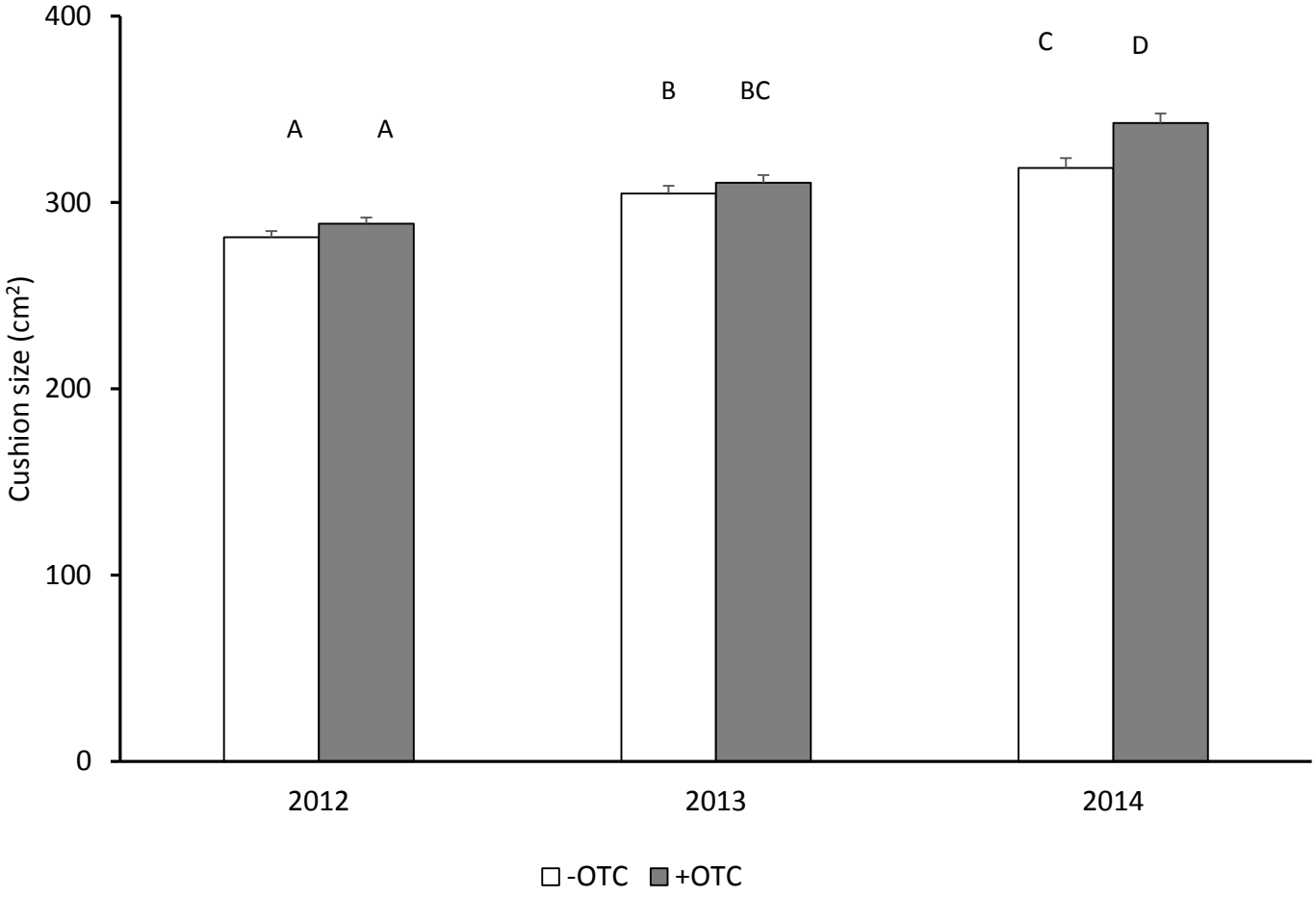
2) Faster growth will decrease canopy compactness, weakening facilitation intensity

3) Water-stressed cushions would have a smaller, less compact canopies

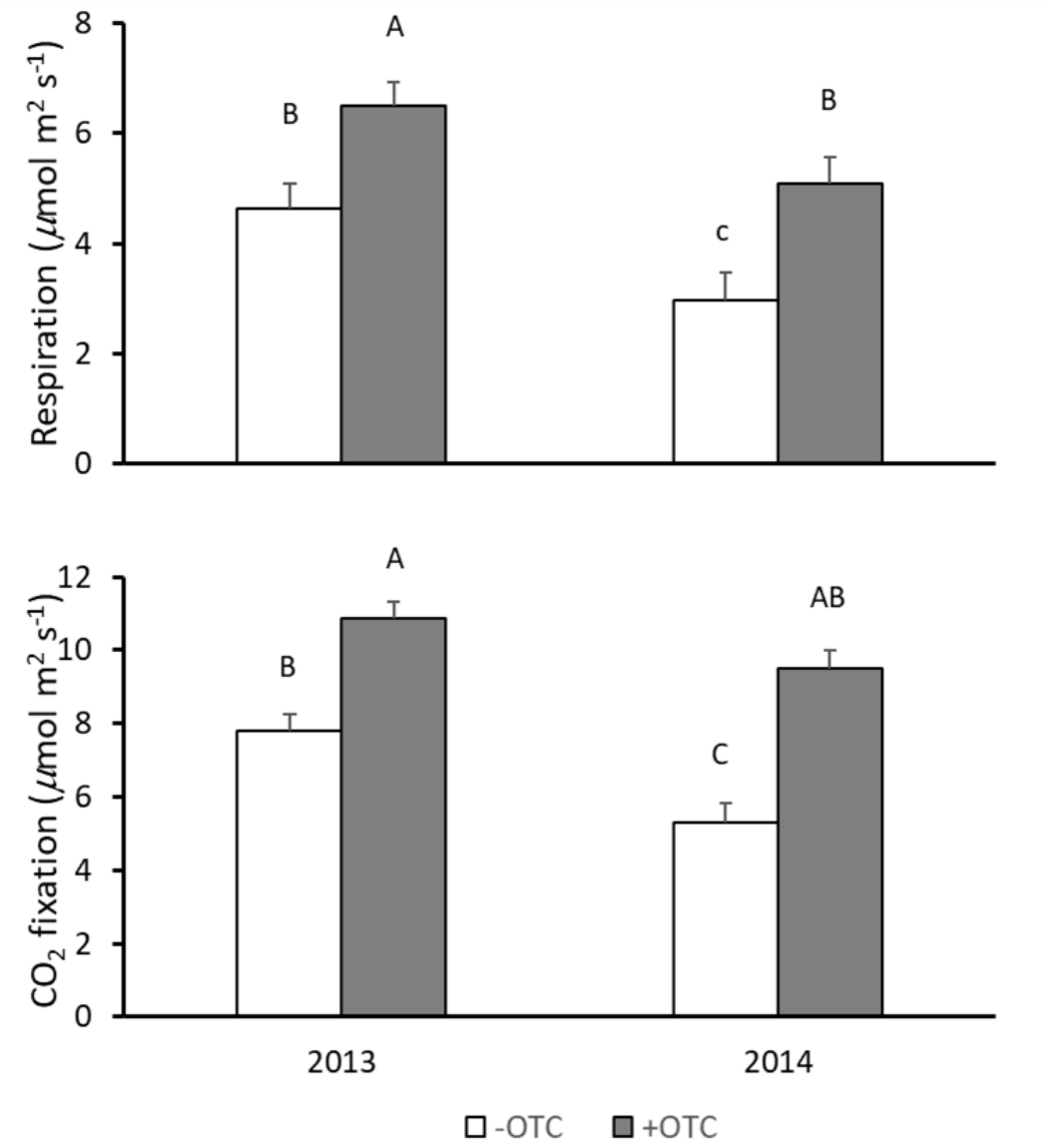
Increased temperature with OTCs
Modified runoff water

The rainfall treatment had no effect

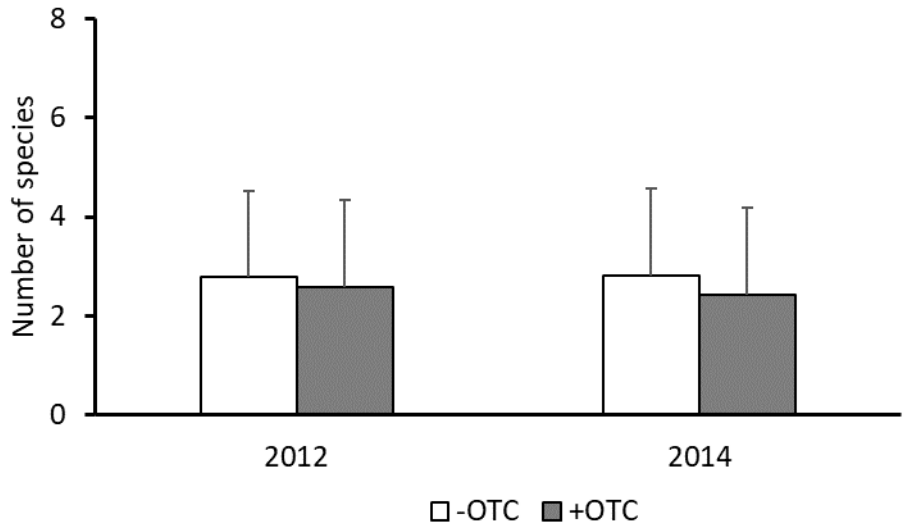
Cushion size

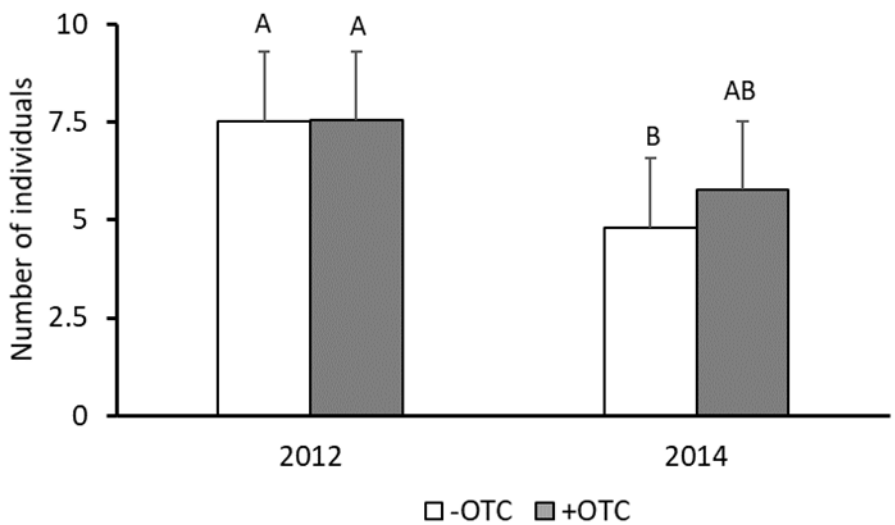


Gas exchange



Species and individuals





Conclusions

Warming will change physiology of *Arenaria tetraquetta*, potentially affecting allocation patterns and the long-term survival of this species.

Warming is unlikely to affect interaction intensity between facilitator and beneficiary species, as expected temperature changes may not be enough to alter current interactions.

However, disappearing cushion species will threaten survival of beneficiary species.