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INTER-SPECIFIC FACILITATION MEDIATES THE OUTCOME OF INTRA-SPECIFIC INTERACTIONS ACROSS AN ELEVATIONAL GRADIENT

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Study Description

We examined the potential for inter-specific interactions to mediate the outcome of intra-specific interactions within the context of plant–plant facilitation. We used *Azorella selago*, a cushion plant and benefactor species, and a co-occurring grass species, *Agrostis magellanica*, on sub-Antarctic Marion Island. Although intra-specific interactions among *A. magellanica* individuals were negative (particularly where inter-specific facilitation by *A. selago* increased *A. magellanica* density), the net reproductive effort of *A. magellanica* was significantly greater in the presence than absence of *A. selago*. Therefore, the positive effects of inter-specific facilitation by a benefactor may outweigh the negative effects of intra-specific competition among beneficiaries.

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Photo 1: Fellfield vegetation on sub-Antarctic Marion Island. This vegetation occupies 61% of the terrestrial surface on Marion Island between 0 and 500 m a.s.l. and 15% of the total area above 500 m a.s.l. *Azorella selago* and *Agrostis magellanica* (seen growing together in the foreground of the photograph) are characteristic species of the fellfield vegetation type. Photo credit: Morgan Raath-Krüger.



Photo 2: *Azorella selago*, a widespread cushion plant (i.e., compact, hemispherical plant) that creates favorable microhabitats by ameliorating abiotic disturbances and stresses on Marion Island. Photo credit: Peter le Roux.



Photo 3: *Agrostis magellanica* rooted in *Azorella selago* on Marion Island. *Agrostis magellanica* is a dominant perennial grass species on Marion Island and is the most common vascular plant species found to grow on *A. selago*. Photo credit: Peter le Roux.

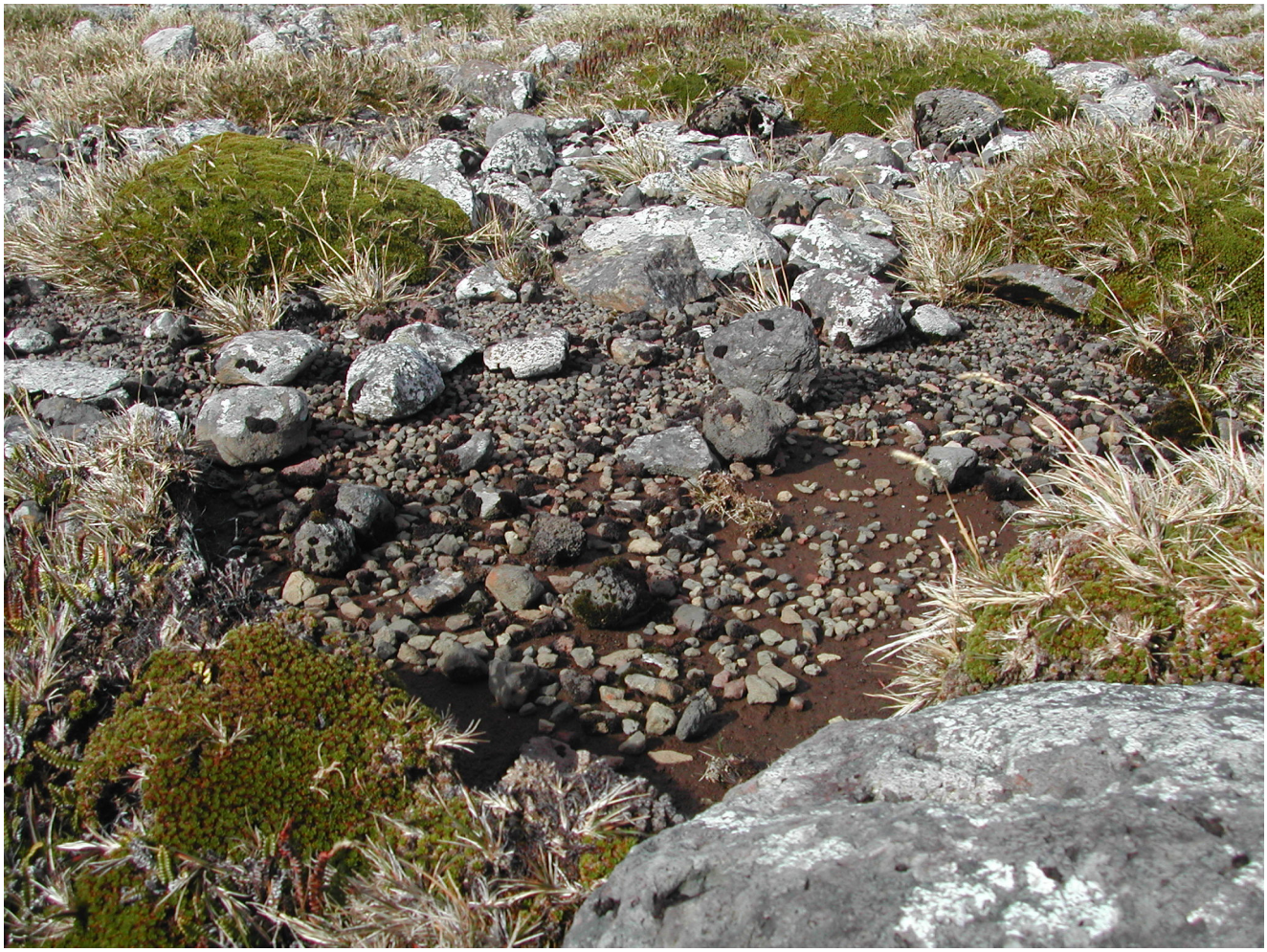


Photo 4: *Agrostis magellanica* and *Azorella selago* in the fellfield vegetation type on Marion Island. *Azorella selago* is known to facilitate *A. magellanica*, where *A. selago's* presence alters *A. magellanica* population structure and increases *A. magellanica's* reproductive output and abundance compared to surrounding areas where *A. selago* is absent. Photo credit: Peter le Roux.



Photo 5: Landscape view of the eastern sector of sub-Antarctic Marion Island. *Agrostis magellanica* is seen growing on *Azorella selago* in the foreground (i.e., lower right-hand corner) of the photograph. Photo credit: Morgan Raath-Krüger.

These photographs illustrate the article "Inter-specific facilitation mediates the outcome of intra-specific interactions across an elevational gradient" by Morgan J. Raath-Krüger, Christian Schöb, Melodie A. McGeoch and Peter C. le Roux. Published in *Ecology*. https://doi.org/10.1002/ecy.3200