

>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

Submitted Abstract

ID IMC22-FSAbstr- 471

First Author First Name Last Name	Leslie Ellen (1) Forero
Submitting Author First Name Last Name	Leslie Ellen Forero
Correspondence	leslie.forero@slu.se
Co-Authors >> E-Mails will be not listed	Jämtgård, Sandra (1); Alexander, Jake (2); Kardol, Paul (1)
Organisations	1: Swedish University of Agricultural Sciences, Sweden 2: ETH Zürich, Switzerland
Country	Sweden
Region	Western Europe
Title	The Role Of Plant-Soil Feedbacks In Mountain Plant Range Expansions.
Keywords	Plant-Soil Feedback, Range Expansion, Invasion
Type	List Of Focus Session
Focus Session ID	45

Abstract

As climate change accelerates, plant species must either experience population reductions or shift their ranges to stay within their species' range of tolerance to climatic variables. However, plant species vary in their ability to shift ranges, depending on dispersal traits, their relationship with chemical and physical soil properties but also the way in which they interact with soil organisms. For example, plant interactions with soil enemies or soil mutualists at the invasion front can either promote or hinder range expansion.

Herein we test soil processes associated with plant range expansion at two mountain sites using elevation as a proxy for the invasion front of range-expanding species. For each of two regions (Norway, Switzerland), we selected range-expanding plant species from within three functional groups (graminoid, forb, and legume). We compared plant growth on sterilized soils to growth on soil inoculated with biota sourced from 1) within the range of the species or 2) beyond the range of the species. This design allows us to test whether release from soil enemies or enhanced interactions with soil mutualists were responsible for plant range expansions. In addition, we replicated the experiment with 5 degrees of warming to project how climate change might impact plant-soil feedbacks and future range expansions. Results are paired with field observations of the same species' growths in community contexts under ambient and warmed conditions.