

>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

Submitted Abstract

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Abstract

Plant invasions have become increasingly common in mountains worldwide, therefore, understanding which factors determine the invasion and at what scale they operate are fundamental for decision-making in the conservation of mountain ecosystems. Although patterns of non-native species in mountain ecosystems have been widely described, little is known about what specific abiotic, biotic, or anthropogenic factors are driven such patterns. Here, we assessed the relative importance of anthropogenic, biotic, and abiotic factors at two spatial scales as drivers of plant invasions along three roads in the Andes of south-central Chile. We sampled non-native plant richness and abundance, and each of these explanatory factors, in-situ in 60 transects in disturbed areas and adjacent undisturbed vegetation. Low elevation areas were the most invaded, with patterns of richness and abundance driven mainly by anthropogenic factors, explaining between 20 and 50% of the variance for the three roads. Only for the abundance of non-native species along the road in the Malalcahuello National Reserve, biotic factors were more important (45% of the variance). At the regional scale, the abundance of non-native species was again explained best by anthropogenic factors (24% of the variance), yet non-native richness was driven most strongly by abiotic factors such as soil nitrogen content and pH (15% of the variance). Our results confirm the conclusions from experimental studies that anthropogenic factors override abiotic factors and are important drivers of non-native species at local and regional scales and that non-native plant invasion in mountains is currently not strongly limited by climate.

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