SESSION: Biodiversity / Botany

MARS Themes:

Ecosystems, biodiversity and biodiscovery

Title:

Do anisotropic processes influence fine-scale spatial genetic structure of a keystone sub-Antarctic plant species?

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Abstract:

While the impact of changes in temperature and rainfall on biotic communities have received much attention, there is a relatively poor understanding of how variation in wind speed and direction may impact these communities, particularly through their influence on dispersal and gene flow. Limited seed or pollen dispersal enhances genetic relatedness (spatial genetic structure, SGS) between nearby individuals and populations, with genetic differentiation between populations or pairs of individuals generally increasing as a function of the spatial distance between them. However, this pattern of SGS may not always occur isotropically when spatially asymmetric processes (i.e., wind speed and direction) are important. Consequently, a greater understanding of the anisotropic drivers of spatial patterns of dispersal, particularly at local spatial scales, is needed. We use molecular tools in conjunction with an advanced fluid dynamics model of wind flow to understand the drivers of observed fine-scale genetic patterns and use Marion Island as a model system as the island's landscape is exceptionally heterogeneous and has experienced recent rapid changes in climate. We genotyped 160 *Azorella selago* individuals along transects on Junior's Kop and use this data to assess the efficacy of combining SGS analyses with anisotropic spatial autocorrelation techniques to infer the impact of changing wind flow patterns on local-scale colonisation and up-slope dispersal processes in these plants.

Format:

Oral presentation

Keywords: (add ; between keywords)

Wind; genetic structure; *Azorella selago*