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Summary of work on Signy Island supported by the Antarctic Science Bursary

As planned I have sampled cryptogams (lichens: *Usnea antarctica, Umbilicaria antarctica,* the moss *Andreaea depressinervis* and the alga *Prasiola crispa*) at increasing distances from penguin colonies across Signy Island and extracted the micro-arthropods living among them. For this study I have visited four areas hosting large penguin colonies along the coastline of Signy Island. The largest of these is at North Point, which is inhabited by Adélie (*Pygoscelis adeliae*), chinstrap (*P. antarctica*) and gentoo penguins (*P. papua*). The colony at Gourlay Peninsula is dominated by Adélie and Chinstrap penguins. Smaller colonies are situated along the west coast of the island, with the Cummings Cove area hosting chinstrap penguins, and Spindrift Rocks Adelie penguins.

Micro-arthropod species richness and diversity (H’) declined with increasing distance from the penguin colonies across all cryptogam species. The most distant sampling point along the transects had consistently lower micro-arthropod abundance compared to the closer ones. This pattern was consistently observed for the Acari but for the Collembola only among *Usnea antarctica.* In addition, I sampled cryptogams across a N-S transect across Signy Island and found no changes in patterns in diversity or abundance indicating that the impact of penguin colonies rapidly diminishes inland.

I did not find any correlations between micro-arthropod and water content of the cryptogams along the transects, and also no effect of altitude on the micro-arthropod community in the absence of penguin colonies. Both water availability and temperature are considered as strong drivers of biological patterns in the Antarctic, but my current findings indicate that these two factors are of less importance at closer proximity (<500 m) to penguin colonies. This suggests that, at relatively small geographical scales, different drivers of community assembly exist in maritime Antarctic terrestrial ecosystems.

A manuscript has been written and will be finalised when the cryptogam samples have returned to Europe and can be analysed for N content.

Stef Bokhorst