

## REPRODUCTIVE STRUCTURES AND TRAITS IN BRYOPHYTA AS REGIONAL WARMING INDICATORS

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The development of sexual reproductive organs and the sporophyte in Bryophyta is generally linked with temperature or photoperiod. Sporophyte production in the maritime Antarctic is typically unusual, although overall 40% of species in this region have been recorded at least once with sporophytes. The rarity of successful sporophyte production is consistent with our recent observations at Point Thomas (King George Island) and in the Argentine Islands. Existing records of sporophyte occurrence, including the proportion of species and sporophyte characteristics, indicate a similar pattern to that of vascular plants, in demonstrating no clear connection with their position in overall geographic distributions. However, it is also known that differences in microclimate between two distant sites in this region can be equal to those between sites close together, thereby influencing the frequency of sporophyte generation. Nevertheless, the latitudinal transect represented by the Antarctic Peninsula and Scotia arc is currently affected by rapid regional climatic changes, impacts of which may be either positive or negative for elements of terrestrial vegetation, including sporophyte production. Vegetation responses to warming will therefore develop as a mosaic strongly dependent on the microclimate of any specific site, and the influence of warming may be masked by inter-seasonal variation, microclimate heterogeneity and studies at inappropriate spatial scales. We recommend the establishment of regular monitoring of reproductive structures and traits in bryophytes at selected locations throughout the maritime Antarctic in order to provide currently lacking and robust data on biological responses to environmental variability and change.