

## BIOCLIMATIC GRADIENTS IN HEATH VEGETATION FROM NORTH NORWAY TO SPITSBERGEN (SVALBARD)

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### ABSTRACT

High latitudes in Norway marks the confluence of boreal, alpine and the Arctic biomes. The northernmost areas in Norway are predominantly treeless due to their position above or north of boreal forest limit. Of particular interest are the coastal heaths found north of boreal forest limit in Finnmark (mainland Norway); because there has been an inconclusive debate on whether these heaths belong to the Arctic. Data on vegetation and temperature has been collected from coastal heaths in Finnmark (above and north of boreal forest limits), Bear Island (only temperature data) and Spitsbergen. The aim of study was to quantify ground vegetation and investigate temperature conditions in coastal heaths from Finnmark to Spitsbergen. Based on the results, we have discussed whether the Arctic zone is present in Finnmark, on mainland Norway. The vegetation analysis in Finnmark and Spitsbergen shows field layer classified into following types: 1. *Salix herbacea* - *Carex bigelowii*, 2. *Empetrum nigrum* - *Salix herbacea*, 3. *Empetrum nigrum* - *Betula nana* - *Ptilidium ciliare*, 4. *Dryas octopetala* - *Cassiope tetragona*- *Poa arctica* and 5. *Saniona uncinata* - *Alopecurus magellanicus*. Out of the five identified vegetation communities, the first three belonged to Finnmark and remaining to Spitsbergen. The gradients in vegetation communities are explained by the maximum average air temperature, average annual air temperature and soil frost sum. The air and soil temperature varied significantly amongst Finnmark, Bear Island and Spitsbergen. Most relevant are the similarities in vegetation and temperature conditions between coastal heaths above and north of boreal forest limits in Finnmark. Since, the Arctic and alpine biomes are categorized based on bioclimatic factors, our findings suggest the north of forest limit heaths be excluded from the Arctic and grouped as a separate zone with new criteria. Although, additional data will be needed to support these findings.

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