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Nährstoffhaushalt und Konkurrenz-Eigenschaften südandiner Moorpflanzen

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Foliar nutrient concentrations of South Patagonian bog species along a climatic and floristic gradient

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Abstract

South Patagonia provides the opportunity to study ombrotrophic bogs under pristine environmental conditions. Peatlands in southern Chile neither receive relevant amounts of atmospheric pollutants nor are they affected by extensive drainage or exploitation.

This paper examines the variation of foliar nutrient contents (N, P, K, Ca, Mg and Na) of South Patagonian ombrotrophic peatland species and their responds to a changing nutrient availability along a gradient of increasing continentality. Particular attention is set on nutrient demands of *Sphagnum magellanicum* as the dominant constituent of continental raised bogs and on those of cushion-forming vascular plants dominating in hyperoceanic blanket bogs. First, I hypothesized that all species are generally characterized by extreme low foliar nutrient concentrations due to the ombrotrophic conditions and the low atmospheric nutrient supply. Second, I expected increasing nutrient concentrations in the biomass towards the west due to the increasing input of sea-born cations and a higher nutrient availability in the peat.

I found out, that nutrient concentrations were generally lowest in *Sphagnum* and highest in the considered graminoid species. Nutrient contents in cushion plants differed widely. *Donatia fascicularis* had relatively low nutrient concentrations, whereas nutrients in *Astelia pumila* tended to relatively high concentrations.

Although variation in foliar nutrient concentrations was mainly reflected by the interspecific variability, a moderate shift along the considered gradient was distinguishable. N and Ca concentration increased and P concentrations decreased westwards in most species. Consequently, the most noticeable shift was an increasing N:P ratio that suggests an increasing P limitation from east to west. The results clearly suggest that variation in the floristic composition of South Patagonian bog ecosystems is not exclusively caused by the steep climatic gradient as assumed in the past, but to an important part by a trophic gradient.

Keywords: cushion bog, *Sphagnum*, ombrotrophic, foliar nutrients, South Patagonia