



Bryophytes and vascular plants show differing taxonomic and functional biodiversity patterns along latitudinal gradients in bogs and fens

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INTRODUCTION

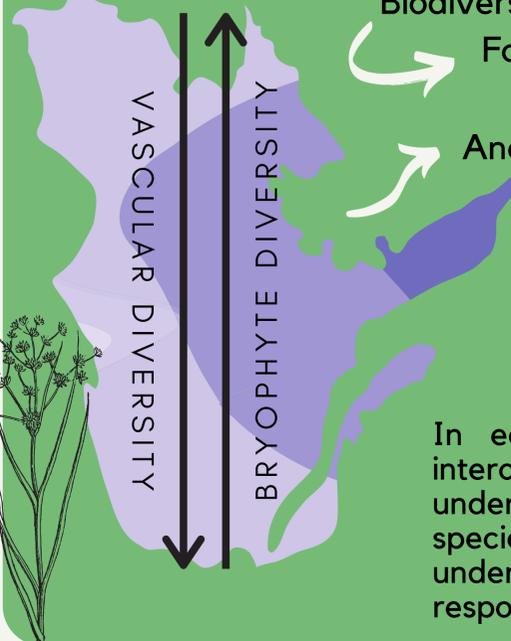
Biodiversity decreases towards high latitudes

For all taxon groups? Some exceptions, like **bryophytes** in the plant world

And why? **Climate? Landscape? Habitat?**

Species respond to environmental filters through their functional traits and integrating functional diversity may allow for a better understanding of the links between community assemblages and ecosystem functions

In ecosystems where both plant groups interact to maintain ecosystem processes, understanding how multiple factors influence species distributions will improve our understanding and predictions of their responses to climate change



METHODS

- Capital-Nature floristic inventories
- Bryophyte (48) and vascular (130) species
- 160 fens, 120 bogs

ANALYSIS

- GLM
 - α -diversity (richness & FDis) ~ environmental variables
 - β -diversity (LCBD) ~ environmental variables
- Variation partitioning by RDA

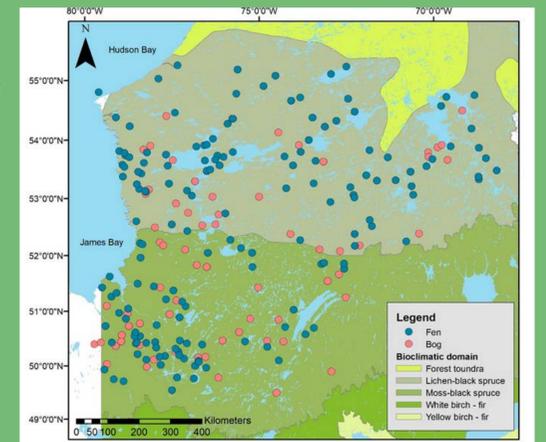


Figure 1. Map of sites

OBJECTIVE

Evaluate the influence of latitude, climate, environmental variables, and ecosystem type (bog vs. fen) on taxonomic and functional diversity (α - and β -diversity) and composition of vascular and bryophyte species

RESULTS

ALPHA

- Vascular richness differs between bogs and fens along the latitudinal gradient
 - \downarrow north in fens, stable in bogs
- Bryophyte richness \uparrow north
- Functional diversity less limited by latitude in bogs

BETA

- Biotic homogenization towards the north
- Increased bryophyte diversity towards the north only applies to richness
- Less functional variability towards the north
- Higher beta diversity in fens

COMPOSITION

- Local variables have most important effects
 - Namely on vascular species and taxonomic measures of diversity
- Traits structured from dry bogs to wet fens
 - Resource acquisition changes with variable conditions
 - Fens: rich and humid, fast growth and quick resource acquisition
 - Bogs: poor and dry, slow growth and resource conservation

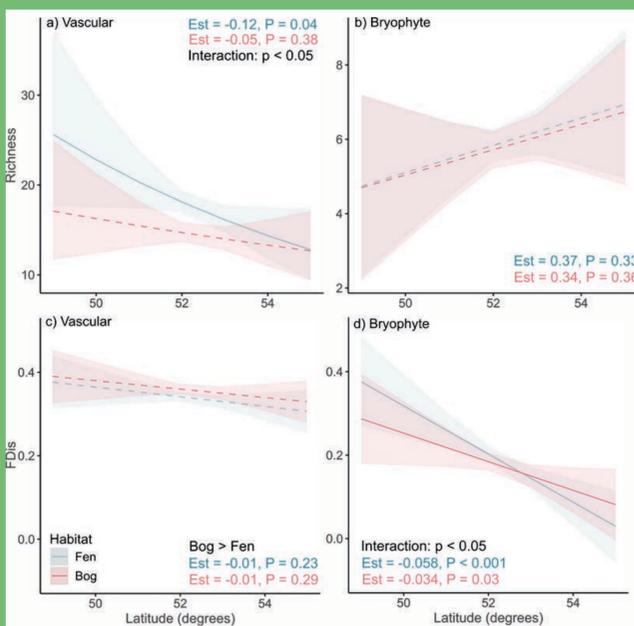


Figure 2. Alpha diversity as a function of latitude in bogs and fens

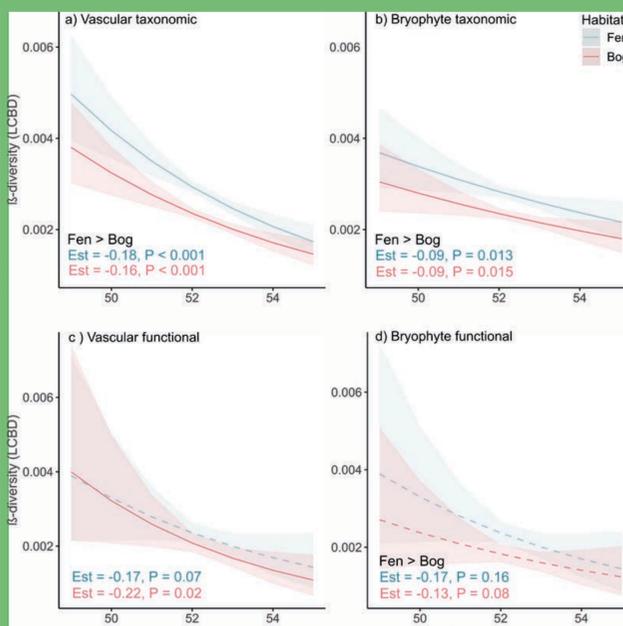


Figure 3. Beta diversity as a function of latitude in bogs and fens

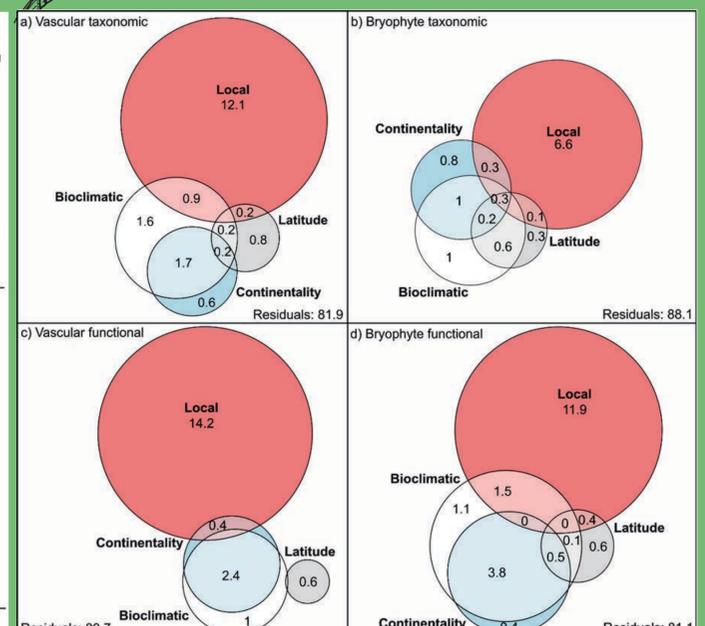
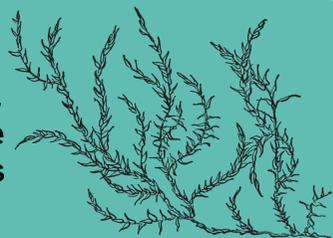


Figure 4. Variation partitioning by RDA

CONCLUSION

Contrasting biodiversity patterns in both peatland types, depending on indicator used. Future studies should include more than one diversity indicator and consider the differences between ecosystems and taxon groups.



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