

Background: Functional trait-based approaches link species diversity patterns to ecosystem functioning. In the context of global change, understanding these links is vital for developing holistic biodiversity management strategies. Bryophytes, important ecosystem components owing to their biogeochemical functions, have not been the focus of many functional studies.

Aims: This is the first assessment of bryophyte functional diversity in the Azores archipelago, aiming to uncover multivariate trait richness and composition patterns along the elevational gradient on Terceira Island.

Methods: Based on five water acquisition and retention traits of leafy liverworts and mosses, we calculated functional diversity metrics within and among six bryophyte communities sampled along a 1021-m elevational transect.

Results: Trait composition differed significantly between coastal and mountain communities. Mosses presented inrolled leaves and ornamented leaf cells at low elevation but not at high elevation. These patterns were associated with an uphill shift from drier and warmer conditions to a moister and cooler environment.

Conclusions: Future climatic changes might affect bryophyte functional diversity patterns in Terceira Island, particularly for mosses. These results can be directly compared with those obtained for other archipelagos where the same protocol has been applied, allowing a joint assessment of insular vegetation functional diversity patterns.

