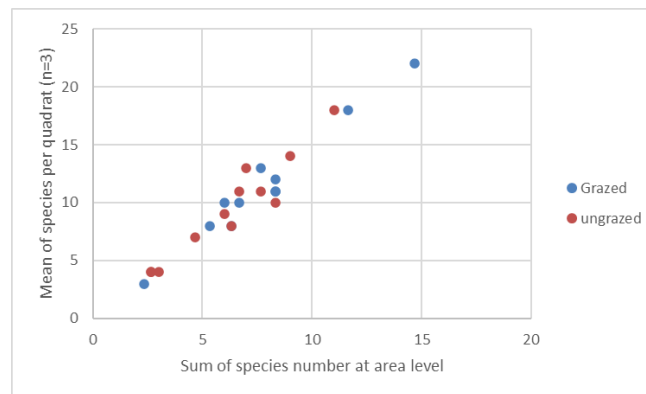


-Diversity is presented at quadrat scale as I understand. Given there are several quadrats at each site, have authors also calculated site-scale diversity? Soil carbon is likely controlled at the site scale, not quadrat scale, so understanding how plant diversity is structured across quadrats within sites may be helpful (e.g., are quadrats similar or dissimilar within sites comparing grazed and ungrazed as a simple measure of turnover).

Thank you for this insightful comment. We agree that site-scale diversity may be relevant when considering controls on soil carbon. To address this point, we calculated plant diversity at the site scale (i.e. pooled across quadrats within each site) and compared it to quadrat-scale diversity. These two measures were found to be strongly correlated (see the figure below), indicating that quadrat-scale diversity provides a reliable proxy for site-level diversity in our dataset.

Therefore, we retained quadrat-scale diversity in the analyses, as it allows direct coupling with biomass and soil measurements, while still capturing broader diversity patterns at the site level.



**Addition in the text:** “Plant diversity was assessed at the quadrat scale to match biomass and soil sampling. This approach was further supported by exploratory comparisons showing that diversity patterns were consistent when calculated at the site scale (i.e. pooled across quadrats), indicating that quadrat-scale diversity adequately represents site-level diversity in this dataset.”