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The role of common upland vegetation on gaseous carbon cycling on UK blanket peat bogs

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The most important control upon the carbon dynamics of any peatland is vegetation. However there is a gap in the literature with respect to comparative, in-situ studies of common upland vegetation types on peat bogs from a carbon cycling perspective. Where studies exist they tend to be narrowly focused (i.e. on one or two species or a small geographical area) or are laboratory manipulation studies.

This study set out to compare gaseous CO_2 exchange, in situ, across a broad (geographic) range of sites dominated by differing, common, upland vegetation types. The vegetation types studied were*; Calluna vulgaris*, *Sphagnum* spp., *Eriophorum* (*E. angustifolium* + *E. vaginatum*), *Molinia caerulea* and areas revegetated with a lawn grass mixture that was used for restoration (*Festuca* spp, *Deschampsia* spp. and *Agrostis* spp.).The primary aim of the study was to assess the carbon cycling potential of the common upland vegetation types, in order to produce clearer evidence as to which upland species produce the most efficient carbon sinks.

The study was carried out in the South Pennines and Peak District of England. All readings were taken from upland-blanket peat bogs, as this type of bog accounts for 87% of the UK's peatlands, and therefore the results of this study can have the widest possible applicability to the rest of the UK's peat reserves. NEE and NER measurements were taken with a PP Systems EMG-4 infra-red gas analyzer. PAR and air temperature readings were taken along side water table and soil pore water samples from every site. Each site was visited monthly for at least 12 months and between 3-9 replicates were recorded per site.

The results of this study will deal with the effects vegetation has on NER, GPP and NEE, focusing on which vegetation types make the most efficient gaseous carbon sinks. Moreover the effect of vegetation on water table levels and water quality will be discussed. Finally a consideration of how the age of *Calluna vulgaris* affects the parameters above will be given.