EGU24-8348, updated on 20 May 2024
https://doi.org/10.5194/egusphere-egu24-8348
EGU General Assembly 2024

Rotational Grazing Approaches for Sustainable Peatland Management: A Focus on the Falklands

Katy Ross[1,2,3], Christopher Evans[1], Ross Morrison[1], Stefanie Carter[1], and Susan Page[2]
[1]UK Centre for Ecology and Hydrology, United Kingdom,
[2]School of Geography, Geology and the Environment, University of Leicester, Leicester, United Kingdom
[3]South Atlantic Environmental Research Institute, Stanley, Falkland Islands

Peatland research, management and restoration efforts have predominantly been focused in the Northern Hemisphere, leaving Southern Hemisphere peatlands, with their confined spatial coverage, relative inaccessibility and smaller research community understudied. To create comprehensive global databases of peat extent, greenhouse gas (GHG) fluxes and support informed restoration efforts, we need to better quantify these Southern Hemisphere peatlands and their role in the global carbon cycle.

Situated in the southern South Atlantic, at the periphery of the climate envelope for peat formation, the Falkland Islands archipelago is believed to support the largest proportional peat extent of any country at 43%. However current estimates of GHG exchange are based on direct measurements from neighbouring Patagonian or distant UK peatlands, or estimated from long-term carbon accumulation rates. These inferred values do not capture the influence of the widespread sheep grazing since the mid-17th Century on this peatland landscape, which, for the first 14,000 years, developed without herbivorous mammals. Livestock grazing is now an integral part of the Falklands with 98% of the peatlands being grazed. Confronting challenges such as drying landscapes, diminishing pasture extent, bare soil exposure to wind erosion and declining wool prices, farmers are exploring alternative holistic and rotational grazing systems or complete removal of sheep to set a trajectory towards peatland restoration.

Over an annual cycle between 2022-2023, direct monthly measurements of CO_2 and CH_4 were conducted across 13 sites in East Falkland using static chambers. These measurements provide the first directly measured annual estimates of GHG emissions from Falkland peatlands under different management approaches. These measures of ecosystem exchange have been enhanced with the deployment of sediment traps and erosion pins to quantify particulate carbon loss, with preliminary results indicating this pathway of loss to be several orders of magnitude higher than observed in Northern Hemisphere peatlands.

This integrated approach, with the results presented here, facilitates a comprehensive understanding of the impact of grazing and land management practices on peatland carbon balance. While also providing evidence alongside existing biodiversity and socioeconomic

studies to determine which grazing systems may be most conducive to sustainable peatland management in the Islands.