

Assessing the natural capital assets of Fitzwilliam Wentworth Estate

ABOUT THIS BRIEF

The Fitzwilliam Wentworth Estate commissioned a natural capital assessment of its landholding. This is a summary of the baseline assessment which included mapping the natural habitats and ecosystem services. It also highlights opportunities to create new habitats to enhance the biodiversity and ecosystem services of the Estate.

BACKGROUND

The Fitzwilliam Wentworth Estate, centred around the village of Wentworth in Rotherham, South Yorkshire, is a large rural landholding. It is managed and maintained for its history and heritage, which is of national importance. Its recreational attractions include historic parkland, a coarse fishery, and a managed grouse moor.

It comprises two distinct landscape characters: the main estate, which consists of parkland and agriculture; and the blanket bog and heather moorland in the Peak District, much of which is a designated Site of Special Scientific Interest.

The natural capital assessment had four aims:

1. Create a detailed natural capital basemap
2. Model and map the benefits that flow from the natural capital
3. Calculate the carbon storage capacity of Bradfield Moor
4. Calculate the monetary value of those benefits
5. Create habitat opportunity maps for biodiversity enhancement and a range of ecosystem services.

APPROACH

Ordnance Survey MasterMap polygons were used to create a detailed map of the habitats present across the Wentworth Estate, and a series of different data sets were used to classify each polygon to a detailed habitat type. Each habitat was also assigned a distinctiveness and condition score so that the Biodiversity Metric 2.0 could be applied.

A range of ecosystem services were modelled and mapped: carbon storage and sequestration, air purification, noise regulation, local climate (urban heat) regulation, water flow regulation, water quality (soil erosion) regulation, food production, timber production, and accessible nature. Where possible, the demand for these services was evaluated.

RESULTS

The maps demonstrate the importance of the woodland asset for the provision of many ecosystem services, such as carbon sequestration, air quality, as well as climate and noise regulation. The blanket bog and heathland habitats of Bradfield Moor are also important areas for carbon storage capacity.

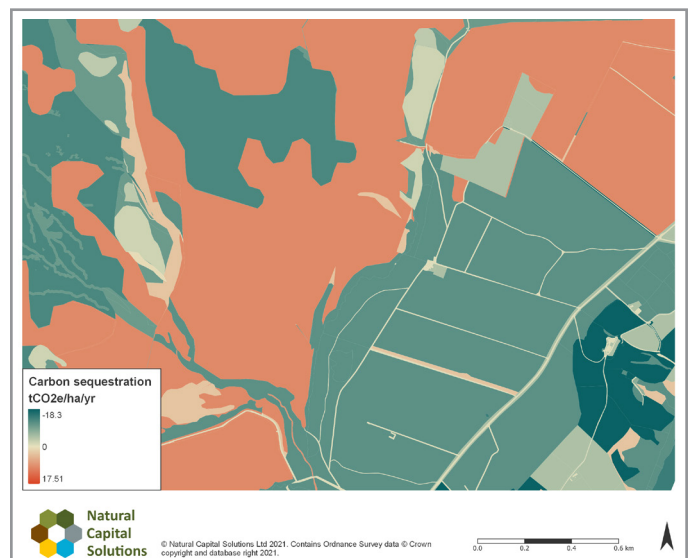
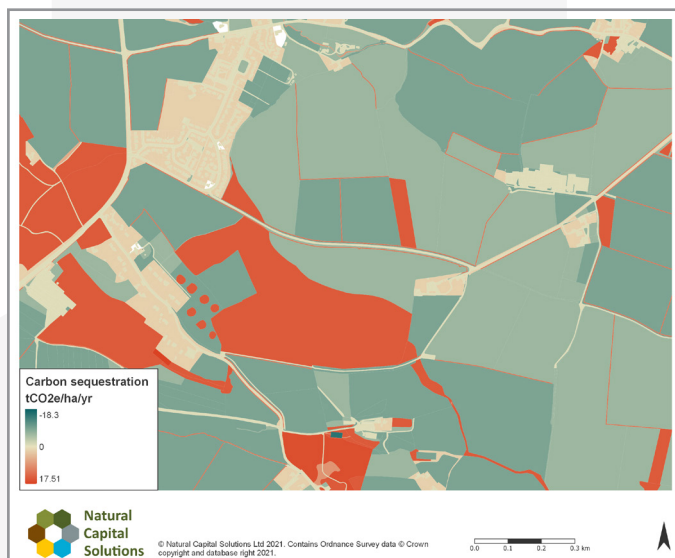
The carbon analysis of Bradfield Moor, that was part of this assessment, showed that it stores over half a million tonnes of carbon. The variation in the condition of the blanket bog influences the ability of the moor to sequester carbon and protect the carbon stored from release. Overall, the carbon is balanced towards sequestration (1668 tCO₂e/year) mainly due to the habitats on the shallow peat soils. However, emissions are associated with blanket bog. These are being reduced through the restoration and re-wetting of blanket bog, better protecting the carbon store. This will also increase the capacity of the moor to hold more water, increasing flood alleviation and improving the water quality.

A valuation was conducted which highlighted the financial benefits and limitations of various ecosystem services and habitats.

RECOMMENDATIONS

In future, the focus should be on increasing the condition of the Estate's assets to unlock further natural capital value. For example, restoration of the modified areas of blanket bog would bring multiple benefits, such as increasing biodiversity, significantly reducing greenhouse gas emissions, and increasing water flow and quality. Increasing and connecting woodland cover across the main estate could also be integrated with strategies for dealing with the Environmental Land Management (ELM) Scheme at the farm scale.

The Estate is now using this assessment to track how its management affects the condition and value of its natural capital assets. The assessment provides an extensive evidence base to respond to Biodiversity Net Gain for development, the new ELM Scheme, and contribute to solutions for the climate and environmental emergencies that have been declared in the region. It will also prepare the Estate for taking advantage of initiatives that can increase the value and revenue from its natural capital assets, for example, managing biodiversity off-sets, maximising ELMs payments, and carbon trading.



Carbon sequestration in the lowland (left) and the moorland (right) areas of the Wentworth Estate in tonnes of carbon equivalent per ha per year.