

1. Introduction

- The Garron Plateau is the largest area of intact blanket bog in Northern Ireland and is recognised nationally and internationally as a habitat for a huge variety of rare plants, insects and birds [Figure 1]. It is located within the Garron Plateau Special Area of Conservation (SAC) and Antrim Hills Special Protection Area (SPA).
- Over thousands of years in the waterlogged conditions typical of the Northern Ireland uplands, *Sphagnum* moss [Figure 2] has decayed to form peat and given rise to the blanket bog.
- The landscape supplies drinking water to approximately 14,000 homes in Ballymena and the surrounding area via the Water Treatment Works at Dungonnell Reservoir operated by Northern Ireland Water. The blanket bog acts as a vital carbon store, trapping and storing atmospheric carbon as peat accumulates.







gure 1: Antrim Hills SPA provides nesting and raging habitats for rare raptors including the hen

ure 2: Sphagnum moss is vit regulating blanket bog and ming peat.

vital <u>Figure 3:</u> Drainage at Garron d Plateau has led to severe peat erosion and impacted raw water quality.



Figure 4: Specialist species such as marsh saxifrage rely on blanket bog habitat in Northern Ireland.

Figure 5: (A) Plastic Dams and (B) Timbe Dams used for blocking drainage chann

3. Sustainable Management – benefits of improving and restoring the blanket bog condition

As part of the Sustainable Catchment Area Management Programme (SCAMP NI), NI Water worked in partnership with the Royal Society for the Protection of Birds and Northern Ireland Environment Agency to conserve and enhance this site. This involved restoring the quality and function of the bog by blocking drainage channels and working with local graziers to reduce grazing pressure.

- Drainage channels were blocked with dams created from peat, timber and plastic to raise the water table and rewet the bog [Figure 5 and Figure 6].
- Together with reduced grazing pressure, conditions are now favourable for bog mosses and other vegetation to recover. This prevents the loss of carbon to the atmosphere from the peat and allows the creation of new peat, which traps carbon and restores the function of the blanket bog as a sink for storage of carbon.
- Blocking drains has reduced erosion and prevented discolouration of the raw water supplied to Dungonnell Reservoir. It is anticipated that this will reduce treatment costs for producing clean drinking water at the Water Treatment Works.
- Preservation and restoration of bog features will provide a habitat for a wide variety of plant and animal species, enhancing biodiversity and reversing the decline of species such as hen harrier, merlin and the perennial herb marsh saxifrage.

2. Problems associated with damage to the blanket bog environment

Blanket bog is a fragile habitat and past management practices at Garron Plateau have taken their toll. Damage has occurred through overgrazing and the digging of drainage channels through the bog.

- Overgrazing and trampling by livestock has resulted in depletion of vegetation and exposure of bare peat which is then susceptible to
 erosion [Figure 3].
- Erosion leads to peat particles in the water, causing discolouration and deterioration in the quality of water supplied to Dungonnell Reservoir. This results in increased reliance on energy and chemicals at Dungonnell Water Treatment Works to produce clean, wholesome drinking water.
- When peatlands are drained, bog hydrology becomes dysfunctional. The water table is lowered and peat oxidises with the result that the habitat is no longer able to support specialist, bog-building vegetation. It starts to release carbon, captured and stored over centuries, into the atmosphere, contributing to climate change.
- The degradation of peat results in loss of habitat and a decline in the species that are sustained by the blanket bog [Figure 4].

4. Monitoring of outcomes

- Condition assessments by Northern Ireland Environment Agency will highlight any improvements in the condition of the bog.
- · Raw water quality from the catchment is continuously monitored at the reservoir.
- Since drain blocking work was completed, Colour (Fig. 7(A)) and TOC (Fig. 7(B)) data indicates that spikes are less pronounced and fewer
 outliers occur. The quality of the raw water has stabilised and this may be attributed to restoration work at the catchment.
- The data for turbidity (Fig. 7(C)) is less conclusive.
- Further long term benefits in the quality of raw water provided by the catchment will become apparent over time as reduced grazing pressure and drain blocking leads to improvements in the bog condition and restoration of bog hydrology.



Figure 7: Raw water quality data parameters at Dungonnell Reservoir for (A) colour, (B) Total Organic Carbon and (C) Turbidity

5. Future plans

- The site has been used to demonstrate best practice in sustainable land management for water quality, biodiversity and reduction of the impact of climate change.
- NI Water and the RSPB are working together to roll out the SCAMP approach to other catchments throughout Northern Ireland, while contributing to the RSPB Futurescapes initiative to restore whole landscape units.
- NI Water has employed a full time Catchment Manager and is already working on catchment management plans for other priority catchments.

This project was undertaken as part of the Northern Ireland Water SCAMP program which aims to sustainably manage our water catchments by protecting and enhancing the natural environment and improving habitats. Restoration of the blanket bog at Dungonnell is also part of RSPB's Futurescapes programme to sustainably manage habitats at a landscape scale





