

The Rocky Road to Peatland Restoration

2023 Review visits to post-2015 Peatland ACTION restoration sites in the Cairngorms National Park

A summary of 2023 review visit findings focussing on emerging issues, leading us to conclude that many older sites have not yet had enough work to tip the balance from erosion to recovery. Considerable work is still required to secure our previous investment.

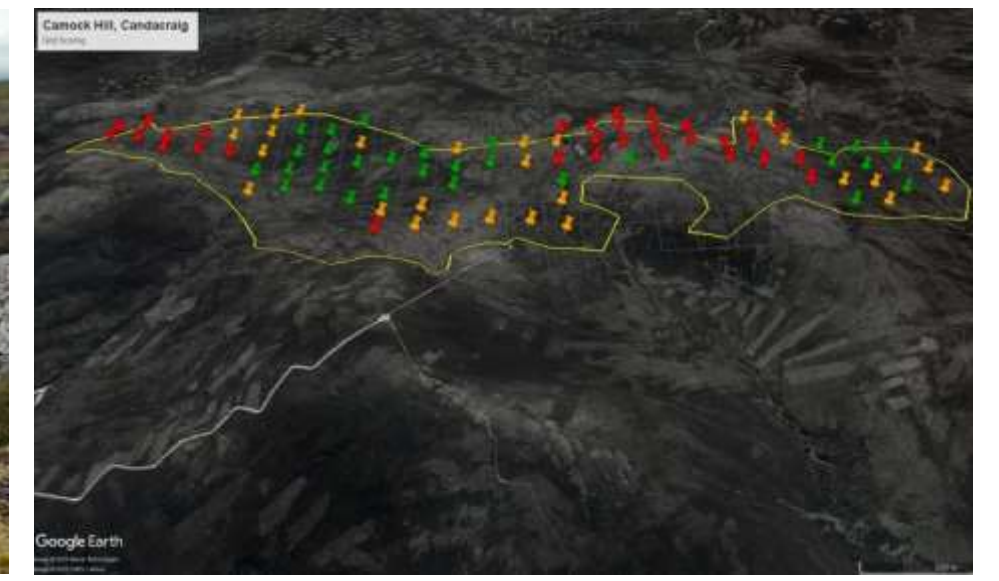
Visits were carried out to past Cairngorms Peatland ACTION restoration sites to ensure continued compliance with our grant terms and conditions, and to assess whether sites are on a trajectory towards recovery or still requiring top-up work.

In the early days of Peatland ACTION the focus was on techniques proposed by specialist contractors, many of which had not been developed in Scotland.

Method- A W-walk aiming to see 10% of restored features, recording green, amber or red pins (depending if further restoration still needed) in GIS every 100m with georeferenced photos. Details recorded on a standard form for every site.

Issues emerging from surveys of pre-2019 sites

- Under specified overall with further scope for both hand & machine-work**
- No. of dams & bunds constructed in erosion systems far lower than needed to stabilise the ground & allow seedlings to spread
 - Stone and timber dams in gullies filling with sediment within 5 years but are very small compared to the height of large gullies, so several more sets will need building on top of them later to restore the gullies
 - Much of the geotextile (jute with small pegs) is now breaking up but the ground beneath is still bare. Particularly noticeable on steep edges
 - Mulch largely unsuccessful when applied without geotextile except wet/flat & sheltered zones
 - Translocated turf dying back & gappy in places (dry crumbly turf from overhanging 'noses', lichen-rich turf & thin turves all unsuitable) plus turf slipping where steeper
 - Untreated hags/gullies present which appear accessible to machines
 - Peat bund failures where poorly constructed or flows are too high
 - Grips blocked with peat dams do not always fully rewet, even after reprofiling of the edges. Particularly deeper, eroded grips



Lessons learned..... how techniques are now evolving

Designers must ensure that sufficient quantities of each technique are specified. Extreme sites may cost >£5,000/ha and still need later top-up.

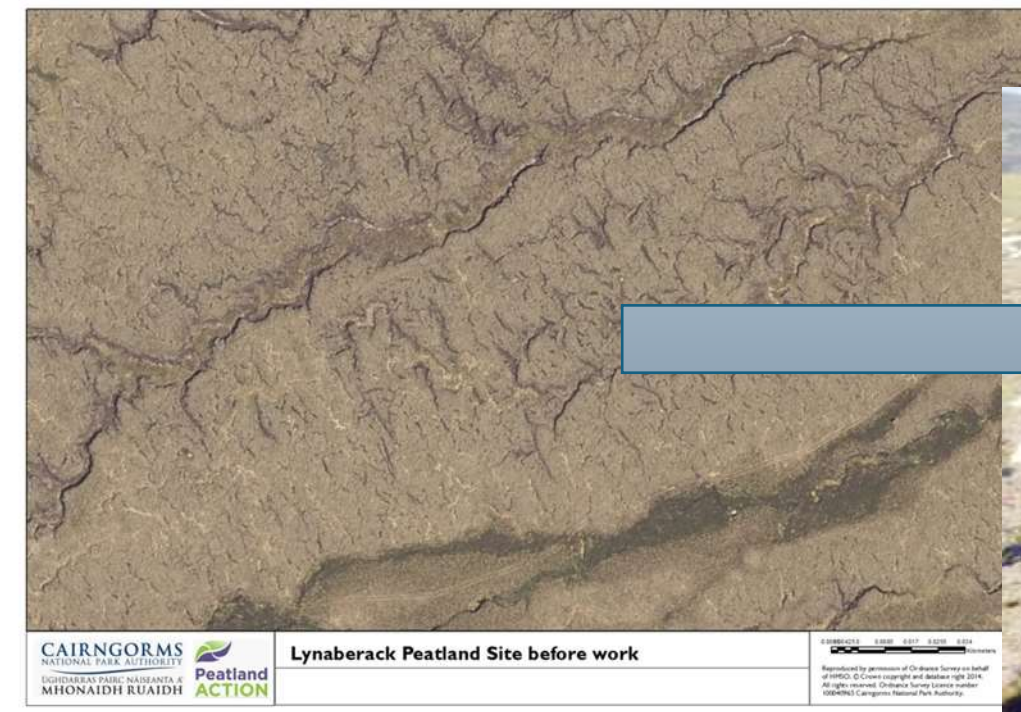
Since 2019 our project design has focused wherever possible on techniques that have been shown to be robust for our sites.

Contracts for a set no. of machine days remove the financial incentive for contractors to rush their work.

Translocation of large, intact, deep turves with 14T excavators is central to this, both for reprofiling erosion and to construct bunds for slowing water and rewetting peat. Stone, timber and combination dams should be used every 7-10m in active gullies where peat bunds will not hold.

- Bare peat requires several simultaneous interventions to facilitate vegetation recovery.
- First, large continuous areas must be broken up into smaller patches using bunds or dams constructed of coir logs, stone, timber, peat-filled sacks or geotextile (depending on site circumstances) to disrupt erosion pathways, stabilise mobile peat and catch seed rain. Retaining moisture during the growing season gives the best results.
 - Small turves are transplanted from nearby and planted deeply within bare ground.
 - Heather/moorland mulch (selected to be rich in mosses) is cut and spread 6cm thick on bare ground.
 - Geotextile is pegged onto sloping and dry bare peat, ideally with a thin covering of brash beneath also.
 - Lime and fertiliser are spread over the work at the start of spring to promote growth.

The wave damming and zippering technique is clearly more effective at infilling and rewetting grips, often reinstating surface water flow along natural seepage lines after the first heavy rainfall.



Revegetated & rewetted in 2021

Lessons learned..... high risk sites

Bare peat that requires hand work remains much higher risk than machine work, even with our improved suite of available techniques. Most recent sites still require some follow-up hand work.

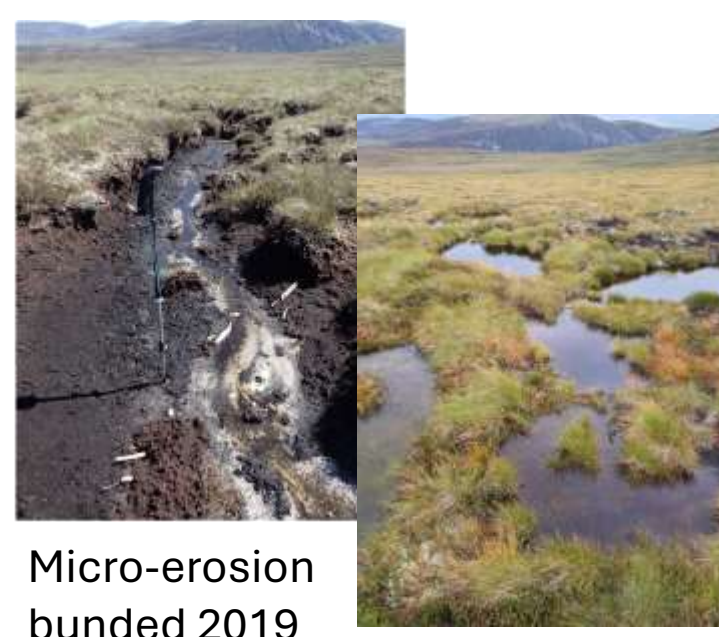
Vertical bare hag and gully edges cannot be successfully restored with any of the currently available suite of hand work techniques, unless the edges are reprofiled by hand (very labour intensive).



New pools created on bare peat, micro-erosion & in grips blocked with wave dams/zippering



Hand-built hessian sack dams



Micro-erosion bunded 2019



Geotextile & mulch applied 2021