FACTSHEET

Stone Dams

Stone dams are permeable gully blocks constructed from piles of stone, airlifted into place using underslung hoppers or dumpy bags and re-profiled by hand. Due to their porous nature they do not trap water immediately (but will do once the pores fill with sediment), but instead slow its flow downstream while trapping sediment from the water, which builds up upstream of the dams. This raises the bottom of the gullies by deepening the soil (especially useful in places where no soil currently exists). Once stabilised, plug plants or seed can be used to re-vegetate the gully bottoms; often, they will re-vegetate naturally with cotton grasses. Alternatively, another series of dams can be installed to raise the gully base still further.

Stone dams require approximately 1m^3 material per dam unit, and are usually about 60cm high though this will depend on the width of the gully and slope; for larger gullies, multiple dam units can be combined to build bigger dams, though they should be no more than 1m high for safety reasons. Rocks should be a maximum of 20cm diameter and a minimum of 15cm. Stone dams do not need to be keyed or driven into the gully bottom or sides, though they should be profiled such that they fully meet the gully sides and are lower in the middle than at the sides (to prevent scouring at the gully edge) and shallower on the upstream side (*Figure 1*, below).

PURPOSE

- Good for trapping sediment
- Good for use in deep gullies
- Enables the re-vegetation of gully bottoms

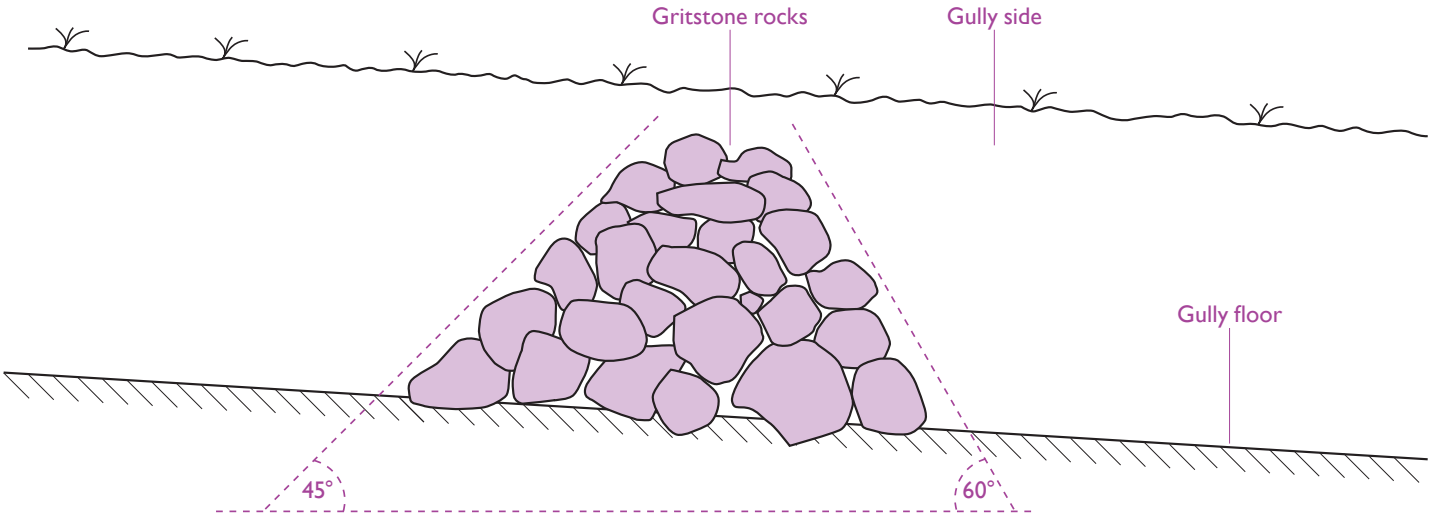
ADVANTAGES

- Uses a natural material that does not look out of place once the dam has silted up and re-vegetated
- No vehicular access required – stone can be airlifted to any location and re-profiled using hand tools
- Can be installed even where the gullies have eroded down to mineral soil
- Easy to cross gullies on foot once the trapped sediment has consolidated

DISADVANTAGES

- As they are reliant on helicopter transportation they can be quite expensive, depending on flight distances

Figure 1: Stone dam construction



CASE STUDY: KINDER SCOUT

Kinder Scout is one of the most heavily-eroded sites worked on by Moors for the Future Partnership, with gullies up to three metres deep, unvegetated, and eroded down to the mineral soil base. With no vegetation to stabilise the peat soil, parts of the gully walls collapsed and were carried away after every heavy rainfall event. Sediment recapture was therefore a high priority and stone dams were employed extensively for this purpose, as they could be constructed in places where no peat soil was left at the base of the gully (*Figure 2*, below). Four years after a programme of dam installation plus re-vegetation through aerial lime, seed and fertiliser application and plug planting, these gullies now have half-a-metre or more of peat soil at their base, which no longer readily erodes away as it is covered in grasses, pioneer heather and cotton grass (*Figure 3*, below). Over time, other species will colonise the gully bottoms to form a healthy moorland community.

Figure 2: Stone dams on Kinder Scout shortly after construction in 2013

Figure 3: Re-vegetated gully on Kinder Scout in 2015, four years after stone dam installation in 2011

MoorLIFE2020

This factsheet is one of a series produced by the MoorLIFE 2020 project. A Moors for the Future Partnership project in the EU designated South Pennine Moors Special Area of Conservation. Delivered by the Peak District National Park Authority as the lead and accountable body (the Coordinating Beneficiary). On the ground delivery is being undertaken largely by the Moors for the Future staff team with works also undertaken by staff of the National Trust High Peak and Marsden Moor Estates, the RSPB Dove Stone and Pennine Prospects (the Associated Beneficiaries).

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