



Report on Options for Erosion Control on Devil's Ladder path Carrauntoohil

Commissioned by Mountaineering Ireland

July 2011

Report on Options for Erosion Control on Devil's Ladder path Carrauntoohil

1. Introduction

- i. On April 19th 2011 I was invited by Mountaineering Ireland to view and give my observations on possible options to manage the erosion, primarily caused by walkers on the main path on Carrauntoohil, known as the Devil's Ladder. My observations and comments are mainly based on my brief visit (in exceptionally dry weather), and are largely confined to looking at practical options to deal with the specific erosion problem in and immediately around the Devil's Ladder. However I've also added comments later in the report on the likely impact, that is likely to occur, as a consequence of not doing any remedial work, on other paths in the area, and the overriding requirement to have a fully thought out and fully consulted visitor management /path maintenance strategy for the whole massif.
- ii. Devil's Ladder is easily the most popular and well used path for both ascent and descent for walkers wishing to climb to the summit of Carrauntoohil. The approach is initially along a well made off-road vehicle track from the parking area at Cronin's Yard or Lisleibane, along the Hag's Glen gradually gaining height until an initial steepening just past Loughs Callee and Gouragh lead to the actual gully line that becomes the Devil's Ladder.
- iii. There have been several debates regarding the most effective and suitable method for containing erosion on the Devil's Ladder, as well as a report commissioned by Mountain Meitheal in September 2003. That particular report, while being extremely comprehensive and thorough, has come up with suggested interventions that are seen by many users to be overly intrusive and overly interventionist. However, whatever options are chosen or decided on, it is patently obvious that the problem of erosion on the Devil's Ladder is worsening, that the primary cause of this erosion is walkers, and that a major contributory factor is water erosion, possibly compounded by some freeze thaw activity, especially on the highly unstable side walls of the upper part of the gully.

2. About the Author and personal approach to upland path management.

- i. I'm currently the British Mountaineering Council's Access & Conservation Officer for Wales, but have previously worked for the National Trust in Wales, both as a Property Manager and a Head Warden. In that capacity I managed a number of teams (both employees and contractors) that carried out upland path repairs on paths in the Glyderau and Carneddau Mountains of Snowdonia. I was also a Project Manager on a multi-agency path repair project that drew down some £4million of European funds to repair eroded paths across all of the Snowdonia National Park. I have contributed to various publications on upland path repairs, including the British Upland Path Trust's "Mending our Ways" publication, spoken at various conferences and training events at various locations across the UK and advised on the suitability and commented on the approach and specifications of several upland path projects.
- ii. In particular I've been critical of the approach adopted by various organisations on Snowdon in previous years, my criticism being based both on the detail of the work (poor quality, over specified and over-engineered) as well as the basic strategic approach where major erosion scars were ignored, but minor paths were over managed. An important point to make is that the management of eroded paths can only be achieved by managing the causative factors, usually people, water and

grazing animals, and that the management of people starts well before they venture on to the mountain. "Popular" mountains (such as Snowdon, Scafell, Ben Nevis, and Carrauntoohil) have an attraction that extends well beyond the usual hill-walking and mountaineering fraternity. They attract an audience that is inexperienced in mountain skills; have different expectations and only a passing interest in the overall mountain experience, other than achieving a high summit. The response of many path managers and authorities is to quite naturally react to this demand by making the mountain even more accessible by constructing larger car-parks, improving paths, adding waymarkers and signposts and generally marketing the mountains as a tourism venue. In an attempt to manage the problems caused by over and inappropriate use, it's very difficult for managers not to compound the problem – the more intervention there is, then usually the challenge becomes easier and more inexperienced walkers attempt the route and have a greater expectation of improved paths and man-made navigation aids, etc.

- iii. There needs to be a greater focus on accurately describing the difficulty and scale of walking in such mountains, that the challenges are natural and "tourist walkers" in particular are made better aware of the nature of the paths and routes on these mountains before they even consider an ascent. The start of a path is often too late for such information, as by that time most people will have already made the decision to climb that mountain.

In a perfect world people need to be managed and informed about the mountains long before they arrive there, however the reality is that for the highest mountain tops, walkers will always arrive and want to climb to the top, no matter what experience they have or how well equipped they may be. There is an expectation among many in society that they have a "right" to get to the highest point of their nation, and that it would be elitist and arrogant to reserve that right to a few committed mountaineers.

- iv. The big question is therefore "when is intervention justified or acceptable?" and often, usually as a result of the nature of capital funding land managers go for the large capital projects in preference to small scale but "little and often approaches". The latter approach is generally less intrusive, requires less initial capital costs, but does need a sustained and genuine commitment to long term maintenance and remedial work.

However it is also a fallacy that large scale one-off capital works involving the construction of very solid stone paths require little future maintenance – the nature of upland paths and in particular the inclement weather means that all paths need constant maintenance. There is an unfortunate history in the British hills of many capital funded paths being constructed and then deteriorating through lack of maintenance, only to be subject to another round of expensive and even more intrusive work in another round of funding!

3. Strategic Issues - McGillicuddy Reeks

The Devil's Ladder path is by far the most popular path in the massif and the erosion problems are considerable and very visible. The problem however is not solely contained to this particular path, and there is very obvious and seemingly worsening erosion on many other routes. This will only increase as people become aware of the condition of the Devil's Ladder and become aware of the alternatives, especially the increasingly used zig-zags route

along the Cnoc na Toinne slope, used by many as a direct alternative to descending the Devil's Ladder.

There does not appear to be any strategic plan or vision for visitor management on the massif. Some very intrusive techniques have been used to create a path up the nearby Torc Mountain, but with no evidence of any real need or requirement from a conservation or land protection perspective. Similarly, a totally unsuitable waymarked circular route has been created along the valley bottom of Hag's Glen, with some very poor quality and destructive machined path in its lower reaches.

There needs to be an audit of the current situation regarding footpaths on the massif and an indication of visitor numbers and trends in visitor numbers. While all path management is to a certain degree intrusive, and to committed mountaineers, seems unnecessary, there seems to be an inevitability that more people are using the massif, with consequent erosion and scarring. At some point the scale of that scarring will become unacceptable, but the danger is that by the time the damage becomes highly visible, the works required to remedy the problem will also become significant and large scale. As previously mentioned, a commitment is required for a 'little and often' maintenance and remedial approach, such as small drainage channels and water bars at key locations with possibly some short sections of built path at sites that are currently showing evidence of localised erosion (such as the two short steep steps between Coimín Iochtarach, Coimín Lár and Coimín Uachtarach).

The previously mentioned path projects (Torc and Hag's Glen circular route), understandably reinforce the suspicions and reluctance of local mountaineers and hillwalkers to accept path restoration projects.

There does not appear to be a history or expertise in upland path management in the area. If works to remedy the erosion problems (which are very likely to become an increasing threat to the visual and conservation value of the area) are to be carried out in a manner, that is both sustainable and sympathetic to the character of the area, then a locally based workforce would need to be trained up to acquire the necessary skills. One way for this to happen would be for an experienced team from elsewhere in Ireland (or the UK) to be used to train up and supervise a local group, using the Devil's Ladder as the focus. This has occurred elsewhere, such as the Snowdonia Upland Path Project, funded through European EAGGF structural funds, which although based on the repair of upland paths, was in reality and for funding purposes, a training and upskilling project for unemployed workers.

4. Devils Ladder –

i. Path description

The Devil's Ladder section of the path is well described in the Mountain Meitheal report. That report conveniently splits the gully into four distinct sections, with a suggested solution to each section described separately.

ii. Section 1 "The Approach"

The report suggests that permanent built cairns should be constructed along this route, to replace the ad-hoc walkers cairns that have appeared along this section. I would strongly suggest that this is inappropriate in this setting, and would set precedence for other paths in the area. There is also the suggestion that the path should follow a "zigzag" line, and again I would disagree with this as the nature of the ground is such that many people would attempt to short cut the zigzags. Zigzags also look imposed and formal in such an open setting and would be very visible from

adjacent mountain slopes and ridges. For now I would recommend that a system of fixed point monitoring using photographs (both distant and close ups) is established to ascertain if the problem of erosion in "The Approach" is genuinely getting worse before committing to any remedial works. If, following a period of monitoring, erosion control works are deemed necessary then the works should be based on constraining the path to one line, using soft techniques such as re-vegetating, "boulder planting" and blocking off any subsidiary braided paths. Any created or "formalised" (in the loosest meaning of the word formal) paths should follow a natural soft curving line, avoiding acute angles.

iii. Section 2 Lower Section of the Devil's Ladder

The original report is reasonable in its suggestions here – but again I would avoid formal zigzagging. As with Section 1, formal monitoring is required to establish if there really is a worsening problem here, or if the area self-recovers during quieter times.

iv. Section 3 Scree and boulder mid-Section

My suggestion here is that a clearly defined line is established, following the most natural curving line and using the natural topography as much as possible. In places some subsidiary paths may be blocked off by judicious use and movement of large boulders and clearing loose and blocking boulders from a preferred "desire" line. Some simple water bars may be required at specific points to direct surface water away from the desire line, but the exact location and necessity would need to be established during periods of heavy rainfall.

Again here, I would fundamentally disagree with the construction of formal cairns. As the angle here starts to steepen, consideration needs to be given to the fact that at this sort of angle the requirements and pattern of walkers descending may be different from those ascending – and this can be used to good effect to help discourage descending walkers from taking short cuts, by creating "false steep drop-offs" at points where people are likely to short cut corners.

At this time there is no requirement for a formal pitched path in this section – again only a programme of monitoring can establish if the problem is worsening, and at this section a combination of both photo-monitoring and vegetation monitoring (to establish if there is an overall loss of vegetation over the whole section or if the path/vegetation cover simply moves from year to year).

If the problem worsens appreciably and visitor numbers increase in the next few years then it's highly possible that a formally constructed pitched path may be required, which although highly labour intensive, would not be technically difficult at this section.

v. Section 4 The Upper Section

The problem of erosion and serious instability is very pronounced here. The nature of the erosion at the very top of the gully is visibly cutting away at the actual peat and horizontal ground above the gully. This is creating an ever increasing steep section at the very top of the gully, which is causing some walkers to attempt to find alternatives to descending this route.

The solution to this problem is a difficult one, both technically and in terms of getting labour to the site to carry out the work.

The solution has to be an engineered one – the problem will not stabilise by itself and due to the nature of the soil and softer rock in the gully bed, will simply continue to erode until it becomes virtually impassable for ordinary walkers. The consequences of this on another mountain might not be such a major problem, but this is Ireland's highest mountain and walkers will simply seek another route, shifting the problem elsewhere and creating a similar scar on another part of the mountain.

My solution to this would involve stabilising the top of the gully, using large boulders to create a "platform" to prevent loose rock, soil and debris from washing down the gully. The side walls would need to be "shored-up" using a drystone wall type technique, but with the barter on as shallow an angle as possible, and using turf¹ and soil as the "mortar". In time this would allow vegetation to become re-established over the eroded side walls.

Due to the size of the gully and the weight of stone involved, it's possible that this would need to be stepped, and the foundation stones of each "step" anchored using through rock bolts to the side walls. Suitable stone would need to be imported for this upper section. The floor of the gully would need to be stone pitched to a very high technical standard, using a very "tight" pitching technique, as the path surface would also become the surface water drainage channel during spate times. In all, probably in excess of 100 tons of stone would be required, and this would involve some 200 under-slung helicopter loads.

Geo-textiles (probably a coarse grid geojute netting) would need to be used to stabilise the upper side walls, combined with an aggressive re-seeding of a suitable nurse crop (with fertiliser) to ensure stabilisation of the soil, until slower growing native species can become established.

Carrying out any footpath works here with large rocks could only be undertaken if the path was closed to all users, as the consequences of any dropped rocks or material onto walkers below would be a real possibility. In any case temporary barriers or "catch fences" would need to be installed, and workers here would not only need to be skilled footpath workers but also trained in and familiar with fall arrest systems.

The work to stabilise erosion and create a sustainable route on this section would involve at least four months work for a team of five experienced people, with follow up "snagging" works of a month, spread over several weeks and possible a few years of return work.

Cutting into the currently stable turf and vegetation of the northern side wall could be catastrophic and should be avoided at all costs - it is only the turf that protects the ground beneath, and once the soil is exposed at this altitude, the combination of walkers feet and rainfall would simply create a larger erosion scar, merging in a short time with the existing scar, and creating a much bigger problem.

¹ A surface layer of earth containing a dense growth of grass and its matted roots; sod.

5. Summary

There is an urgent need for a strategic plan or vision for visitor management on the massif.

The Devil's Ladder path is by far the most popular path in the massif and the erosion problems are considerable and very visible. The problem however is not solely contained to this particular path, and there is very obvious and seemingly worsening erosion on many other routes.

The intervention described within will require an experienced upland path building team and it will also require on-going maintenance. A training and up-skilling project for unemployed workers of the local area should be part of this plan.

Postponing the intervention on the Devil's Ladder will only lead to increased financial and environmental costs.

Elfyn Jones
BMC Access & Conservation Officer (Wales)

Internal Report