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ABSTRACT A tongue of hummocky terrain ~1 km long and ~400 m wide extends downslope from the source area of a rock-slope failure that formed the summit arête of Sgùrr nan Ceathreamhnan in the NW Highlands. The tongue descends from ~810 m to ~650 m, crosses a corrie obliquely and laps onto an opposing slope. Individual hummocks are circular to elongate, up to 6 m high and streamlined. A possible origin as recessional or ice-stagnation moraines is inconsistent with hummock morphology and the alignment of the hummock belt, and the streamlining of the hummocks is incompatible with the form of unmodified rock-avalanche runout hummocks. It is proposed that the tongue of hummocky terrain represents rock-slope failure during or after ice-sheet deglaciation, and subsequent modification of runout debris by subglacial erosion during the Loch Lomond Stade (~12.9–11.7 ka). This interpretation implies (i) that the debris was deposited by an excess-runout rock avalanche; (ii) that the glacier that subsequently occupied the corrie was warm-based; (iii) that Lateglacial landslide runout debris was not invariably evacuated by Loch Lomond Stadial glaciers, as previously suggested; and (iv) that some features interpreted as hummocky moraines elsewhere may have a similar origin.

KEY WORDS: glacial bedforms; hummocks; Lateglacial; Loch Lomond Stade; rock avalanche; rock-slope failure

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Introduction

In this paper the term *landslide* refers to rock-slope failures (RSFs) in the form of rockslides, rock avalanches, major rockfalls, toppling failures, deep-seated rock-slope deformations and complex failures involving two or more types of movement. Landslides are a pervasive feature of mountainous terrain in the Scottish Highlands. Watters (1972) and Holmes (1984) showed that large postglacial landslides are widespread on metasedimentary rocks, particularly schists, and a compilation of documentary evidence (Ballantyne 1986) identified 564 RSFs in the Highlands and Hebrides. Jarman (2006, 2007) estimated that the Highlands alone contain over 550 RSFs, including 140 with areas exceeding 0.25 km^2.

Cosmogenic nuclide exposure dating of the runout debris of catastrophic RSFs in Scotland and NW Ireland has demonstrated that almost all located outside of the limits of the Loch Lomond Readvance (the glaciers that culminated during the Loch Lomond Stade (LLS) of ~12.9–11.7 ka) occurred during the Lateglacial period, the interval between ice-sheet deglaciation (~17–15 ka, depending on location) and the end of the LLS at ~11.7 ka. Analysis of the timing of 20 Lateglacial RSFs suggests that landslide activity peaked within two millennia following ice-sheet deglaciation in response to (i) progressive weakening of rock slopes due to deglacial stress release and associated propagation of internal joint networks, and (ii) seismic activity associated with fault movements due to rapid glacio-isostatic uplift (Ballantyne et al. 2014a, 2014b). It follows that *inside* the limits of the Loch Lomond Readvance many large catastrophic RSFs must also have occurred during the Lateglacial period, but that the resultant runout debris has been removed by glacier ice. The sites of such 'debris-free' RSFs take the form of landslide scars on mountainside slopes, typically characterised by steep headscarps, planar or stepped failure planes, sidescarps, tension cracks above headscarps and, more rarely, detached landslide blocks near the crest of the failure plane (Ballantyne 2013; Cave & Ballantyne 2016).

The fate of landslide runout debris removed by Loch Lomond Readvance glaciers is poorly understood. At a few sites, landslides appear to have deposited debris directly on to the surfaces of these glaciers, which then transported it farther downvalley (Peacock 1975; Robinson 1977; Ballantyne & Stone 2013). Benn (1989) has shown that exceptionally large lateral moraines emanating from corries are linked to the presence of cliffed corrie sidewall source areas, suggesting that such moraines comprise mainly glacially-reworked rockfall and RSF debris. Similarly, a massive end moraine fronting Coire Fearchair in the Red Hills of

Skye appears to represent the final destination of runout debris from one or more rockslides from the corrie headscarp (Ballantyne *et al.* 2016). It also seems likely that Lateglacial RSFs that occurred before or during the Loch Lomond Readvance contributed to the vast quantities of glacigenic sediment present in the recessional hummocky moraines that represent oscillatory retreat of Loch Lomond Readvance glaciers in many Highland glens (Ballantyne 2013).

A further possibility is that Loch Lomond Readvance glaciers over-ran and modified Lateglacial landslide debris at some sites. Glacial modification of very large landslide blocks is evident on the Trotternish Peninsula on Skye, where successive ice sheets have smoothed and moulded displaced masses of basaltic lavas east of the zone of postglacial slope failure (Godard 1965; Ballantyne 2007a, 2016). The Trotternish landslides, however, are exceptional in that they involved foundering, sliding and lateral displacement of exceptionally large blocks of basaltic lava up to 300 m thick that have resisted entrainment by glacier ice, and are both structurally and morphologically unrepresentative of RSFs elsewhere in Scotland. In this paper the evidence for glacial modification of Lateglacial landslide runout debris is described with reference to an apparently 'debris free' RSF site at Sgùrr nan Ceathreamhnan in the NW Highlands.

Sgùrr nan Ceathreamhnan

Sgùrr nan Ceathreamhnan (NG 057228; 57°15'N, 05°14'W; Figure 1) is located on the main N–S watershed in the Kintail area of the NW Highlands. The highest parts of the mountain consist of twin summits, the East Top (1151 m) and West Top (1143 m). These are 500 m apart and linked by a narrow arête formed by a major landslide south of the summit ridge (Figure 2a). The mountain and adjacent low ground are underlain by pelitic and psammitic schists (May *et al.* 1993). South of the summit arête these are strongly foliated, fractured and dip steeply (65°) southwards, forming the backscarp of the landslide (Figure 2b).

During the Last Glacial Maximum of ~26–19 ka, the mountains of Kintail were completely buried under the last Scottish Ice Sheet; Hughes *et al.* (2014) calculated that the LGM ice divide over northern Scotland must have exceeded ~1400 m relative to present sea level. By ~16.0 ka summits in Wester Ross and adjacent areas had emerged from the ice (Fabel *et al.,* 2012), and it is likely that all low ground in the area was deglaciated by, or shortly after, the onset of rapid warming that heralded the beginning of the Lateglacial Interstade of ~14.7–12.9 ka (Ballantyne & Small 2018). Glacier ice reoccupied the corries and valleys the Kintail area during the ensuing Loch Lomond Stade (~12.9–11.7 ka). During this period glacier ice filled Coire Allt an Tuirc, south of Sgùrr nan Ceathreamhnan (Figure 1), and fed a large valley glacier that terminated 25 km to the east at the mouth of Glen Affric (Bennett & Boulton, 1993a, 1993b). During the Loch Lomond Readvance maximum the higher parts of Sgùrr nan Ceathreamhnan formed a nunatak, completely surrounded by glacier ice. On neighbouring Sgùrr Gaorsaic (839 m; NG 036219), 2 km to the SW, a well-defined trimline indicates a maximum Loch Lomond Readvance ice-surface altitude of ~700 m, and ice probably extended 100–200 m higher at the headwalls of the corries that flank Sgùrr nan Ceathreamhnan.

The Sgùrr nan Ceathreamhnan landslide and hummock belt

The landslide source area on Sgùrr nan Ceathreamhnan is roughly concave in planform and extends ~700 m from the West Top to the crest of cliffs about 200 m SE of the East Top (Figures 1 and 2a). The cliffs that comprise the scar are 50–100 m high and largely defined by the dip of the foliation (~65°) and associated joints (Figures 2a and 2b). Tension cracks and down-dip displaced blocks occur near the crest of the scar. There is no evidence of ice-moulding or other form of glacial modification, indicating that the landslide occurred after downwastage of the last ice sheet. Conversely, the absence of bouldery runout debris or slipped masses of rock downslope from the landslide source indicate that failure must have occurred during the Lateglacial period, in the interval between ice sheet deglaciation (after ~16 ka) and the end of the Loch Lomond Stade. A much smaller landslide scar is represented by an arcuate cliff about 300 m south of the West Top; this also lacks runout debris.

Downslope from the main landslide scar a tongue of hummocky terrain ~1 km long and ~400 m wide extends obliquely across the floor of Coire Allt an Tuirc (Figures 1, 2c and 3). The hummock belt descends from about 810 m altitude directly below the landslide scar, crosses the main stream (Allt Beithe Garbh) then slightly ascends the far slope to 700–710 m to terminate east of Beinn an t-Socaich (Fig. 1). The margins of the hummock belt are well defined, though terminal or lateral ridges are absent; outside of the belt the slopes are covered by gently undulating glacial drift or hill peat. Hummocks are confined to the tongue apparently emanating from the main failure scar (Figures 1 and 3) and are absent from the western part of the corrie.

Most individual hummocks are 2–6 m high and 25–60 m long. They range from circular in plan to elliptical or elongate, appear to be randomly but fairly uniformly distributed and are commonly separated by bogs or ponds (Figure 2d). All are gently domed, and most are streamlined in a southerly direction. Many support scattered glacially-deposited schist boulders up to 1.5 m long. Exposures in the hummock belt are limited to two shallow stream banks. These reveal interlocked angular clasts of varying size, some of which have apparently experienced *in situ* fracturing, with an infill of coarse granular material in the voids between clasts. By contrast, a streambank exposure downvalley from the hummock belt reveals clasts of various sizes embedded in a tough silty-sand matrix; some of the clasts exhibit the edge rounding and faceting characteristic of debris that has been in modified at the bed of a former glacier, indicating that this downvalley deposit is a subglacial till.

Interpretation

Although from a distance the mounds superficially resemble hummocky recessional moraines formed during the oscillatory retreat of Loch Lomond Readvance glaciers (e.g. Benn 1992; Bennett & Boulton 1993b; Benn & Ballantyne 2005; Benn & Lukas 2006; Ballantyne 2007b), but such hummocky moraines are generally steeper, often peaked and lack the streamlining of characteristic of the hummocks described above (Figure 2d). Moreover, hummocky recessional moraines link to form a nested sequence of concentric ridges or chains of mounds that descend downvalley, each ridge marking a former ice margin position during overall glacier retreat. The hummocks in Coire Allt an Tuirc, however, are randomly if fairly evenly distributed, and not aligned in this way. Interpretation of the hummocks as hummocky recessional moraines also fails to explain why the tongue of hummocky terrain crosses the corrie obliquely, rather than being focused around the corrie axis (Figures 1, 2c and 3). Formation of the hummocks as ice-stagnation hummocky moraines can also be ruled out, as though such moraines may be randomly distributed, they are typically steep-sided, often conical and lack the streamlining evident on the Coire Allt an Tuirc hummocks (Benn 1992). Such streamlining (Figure 2d) strongly suggests that the hummocks represent subglacial bedforms that have been moulded to their present morphology by the Loch Lomond Readvance glacier that occupied the corrie, though they lack the consistent alignment typical of classical bedforms such as fluted moraines, drumlins or ribbed moraines (Benn & Evans 2010), and explanation of the hummocks simply as subglacial bedforms formed in corrie-floor drift deposits fails to explain the oblique alignment of the hummock belt across the corrie floor and its apparent relationship with the landslide scar on Sgùrr nan Ceathreamhnan.

This relationship suggests that the tongue of hummocky terrain represents the runout of a rockslide or rock avalanche sourced at the landslide scar that forms the south face of Sgùrr nan Ceathreamhnan. Hummocks are a common feature of the runout of large rock avalanches, particularly those associated with collapse of volcanic edifices (e.g. Siebe *et al.* 1992; Yoshida *et al.* 2012), though opinions differ as to how they form. Dufresne & Davies (2009) envisaged that they represent the remnants of longitudinal flow ridges, formed where runout velocity perpendicular to flow approaches or equals flow velocity, but analogue models developed by Paguican *et al.* (2014) suggests that they evolve from large landslide blocks that break up during movement. Hummocks on the runout zones of large rock avalanches, however, tend to exceed (sometimes greatly) about 10 m in height. Rock avalanche hummocks beside the Dart River in New Zealand rise only 1–10 m above the floodplain, but as floodplain deposits have buried the base of these hummocks their true heights may be considerably greater (McColl & Davies 2011). It is notable, however, that the shallow streambank exposures at the base of two hummocks in Coire Allt an Tuirc closely resemble the clast-supported facies depicted in McColl & Davies (2011, Fig. 7). The principal morphological difference between documented rock avalanche hummocks and those investigated here is that the former are typically conical or elongate with steep sides, whereas the hummocks in Coire Allt an Tuirc are gently-domed, streamlined features.

Explanation of the origin of the hummocky terrain in Coire Allt nan Tuirc must satisfy two criteria, namely (i) the apparent relationship between the major rockslide scar on Sgùrr nan Ceathreamhnan and the tongue of hummocky terrain and (ii) the smooth, subdued, streamlined nature of the hummocks. As argued above, no single process or origin appears to satisfy both criteria. The most plausible explanation of the hummocks is that they represent the outcome of two processes, namely: (i) catastrophic structurally-guided failure of the south face of Sgùrr nan Ceathreamhnan in the form of a rock avalanche, and consequent deposition of a tongue of hummocky runout debris analogous to those reported in the studies cited above; and (ii) subsequent (re)occupation of Coire an Tuirc by glacier ice that eroded and moulded the landslide runout hummocks into the subdued forms now present.

In terms of this interpretation, there are two possible scenarios. First, it is possible that the rock avalanche occurred when a small residual glacier occupied Coire an Allt Tuirc during the final stages of ice-sheet glaciation (~15.0–14.5 ka), so that landslide debris was spread over the ice surface, forming hummocky stagnant ice topography as the ice downwasted. This scenario, however, requires the residual ice body to have been stagnant and immobile at the time of the rock avalanche, otherwise debris would have been redistributed downvalley by glacier movement. The second possibility is that the rock avalanche occurred during the Lateglacial Interstade (~14.7–12.9 ka), when the corrie was ice-free. As the tongue of hummocky terrain extends downslope for 1 km from ~810 m altitude to ~650 m where it crosses the main stream (Allt Beithe Garbh) and up the opposite slope to ~700–710 m, this scenario implies that the postulated rock avalanche exhibited excess runout, defined as runout distance that exceeds that which might be expected from frictional sliding alone. Many rock avalanches exhibit excess runout, including some in the British Isles, such as the Lateglacial Errigal and Muckish landslides in NW Ireland (Ballantyne *et al.* 2013) and the Beinn Alligin rock avalanche in Torridon, which involved debris runout of 1.25 km (Ballantyne & Stone 2004). In his classic analysis of this phenomenon, Hsü (1975) suggested that excess runout distance (L_e) could be approximated by:

$$L_e = (L - (H / \tan \phi) \qquad (1)$$

where L and H are respectively the total horizontal and vertical distances from the crown of the slide scar to the toe of the runout debris (Corominas 1996), and $\tan \phi$ is the coefficient of sliding friction. Hsü (1975) assumed $\phi = 32°$ so that $\tan \phi = 0.625$. In the present case L = 1600 m and H = 470 m, and assumption of $\phi = 30°$, 32° and 35° indicates excess runout of 785 m, 852 m and 928 m respectively; these values represent the runout distance of debris beyond that which might be expected from frictional sliding alone.

Although it has been widely accepted that excess runout represents movement by large-scale grainflow, most early explanations of this phenomenon involved particular topographic circumstances, runout over water-saturated or deforming substrates, or physical processes of questionable validity (Campbell, 1989; McSaveney & Davies 2007). A more plausible model, outlined by Campbell (1989) and elaborated by Cleary & Campbell (1993), explained excess runout in terms of development of a thin layer of highly-agitated particles that reduce friction at the base of the mobile debris. More recently, it has been proposed that excess runout (and the motion of large rockslides in general) can be explained by crushing of grains under large dynamic stresses, causing fluid-like behaviour that lowers the frictional resistance to flow (Davies & McSaveney 2002; Davies *et al.* 1999, 2010; McSaveney & Davies 2007).

Irrespective of the runout mechanism involved, it is proposed here that the landslide debris initially formed hummocky terrain that was subsequently modified by the glacier that occupied Coire Allt an Tuirc during the Loch Lomond Stade. This interpretation implies that the corrie glacier was warm-based, and hence capable of sliding over its bed and eroding the landslide debris through a combination of abrasion, quarrying (plucking) of debris from the lee sides of hummocks and entrainment of loose debris that was frozen on to and incorporated within the base of the ice. The resultant streamlined mounds are therefore not moraines but the products of subglacial erosion, broadly similar in morphology to both whalebacks (ice-moulded bedrock forms) and small drumlins (ice-moulded drift features), though it is likely that their present planform (circular, elliptical or elongate) was dictated by that of the original landslide hummocks. A possible alternative explanation, also consistent with the available evidence, is that the runout debris was *not* hummocky but characterised by zones of variable resistance to subglacial erosion (e.g. large semi-intact landslide blocks) that were subsequently transformed by subglacial erosion into streamlined hummocks and intervening depressions.

Discussion

Cook *et al.* (2013) have described the characteristics of rock-avalanche debris that was over-run by a minor (~400 m) readvance of the margin of Feegletscher (Switzerland), and remained buried under the glacier for 10–40 years. Subsequent retreat of this glacier has exposed the over-run debris, which exhibits very limited modification; over-run boulders have retained their angularity and brecciation, and form small (~1 m high) hummocks consisting of angular metre-scale boulders covered by a drape of diamicton. Lack of glacial modification of the over-run rock avalanche debris was attributed by Cook *et al.* (2013) to 'armouring' of the runout deposit by a surface cover of large boulders that resisted subglacial entrainment. Their study confirms that coarse rock avalanche debris may survive over-running by glacier ice, as postulated above, but is not strictly comparable to the situation at Sgùrr nan Ceathreamhnan. This is because they investigated over-running of coarse debris by a thin, low-gradient glacier over a period of less than 40 years, whereas the Loch Lomond Readvance glacier that occupied Coire an Tuirc must have been at least 100 m thick, probably had a moderate to steep surface gradient and persisted for at least 500–1000 years. As the shear stress generated at the base of glaciers scales directly with ice thickness and nonlinearly with ice surface gradient, the basal shear stress of the glacier that formerly occupied Coire an Tuirc must have been much greater than that at the base of Feegletscher, permitting progressive erosion of rock-avalanche runout debris over a much longer timescale. Conversely (but speculatively), it seems probable that the hummocks in Coire an Tuirc have survived glacial erosion because of the *relative* brevity of the Loch Lomond Readvance; had ice continued to thicken to form an ice sheet (such as the last Scottish Ice Sheet, which persisted for ~15 ka), it seems likely that such hummocks would have been completely removed by subglacial erosion.

A number of studies have highlighted the problems associated with differentiating landslide deposits from moraines, or have demonstrated that the interaction of landslides with glacier ice produces landforms or landform associations that reflect the operation of both agents (e.g. Davies *et al.* 2013; Deline 2009; Deline & Kirkbride 2009; Hewitt 1999, 2009; Larsen *et al.* 2005; Schulmeister *et al.* 2009; Shakesby & Matthews 1996; Tovar *et al.* 2008; Wilson & Jarman 2013). As noted by Davies *et al.* (2013), in formerly glaciated mountain areas there has been a tendency for uncritical attribution of landforms to glacial erosion or deposition. The evidence presented here provides a new perspective on the interaction of Lateglacial landslides and the Loch Lomond Readvance glaciers in Scotland. Previous studies have suggested that 'debris-free' Lateglacial landslide scars represent complete evacuation of runout debris by Loch Lomond Readvance glaciers, and its subsequent incorporation in moraines (Ballantyne 2013; Cave & Ballantyne 2016). The evidence presented here indicates that in some localities landslide runout debris survived (but was modified by) glaciation during the Loch Lomond Stade.

It remains to be established how widespread this phenomenon is in Scotland: it is possible that some areas previously mapped as hummocky moraines actually represent glacially-moulded landslide runout deposits such as that described here. One probable example occurs at the head of Coire na Cràlaig (NH 096161) below an apparent landslide scar on the east flank of Stob Coire na Cràlaig (1008 m; NH 091163), 7 km SSE of Sgùrr nan Ceathreamhnan. At this site a zone of subdued hummocks, ponds and disordered drainage similar to that in Coire nan Tuirc occurs at ~750–850 m on gently-sloping ground (Figure 4), though here some of the hummocks are aligned as broad transverse or oblique ridges.

A possibly analogous site has also been described in Cwm Cerrig-gleisaid, in the Brecon Beacons of South Wales. At this site the upper part of a kilometre-long flowslide or excess-runout rock avalanche deposit is crossed by a zone of low mounds and ridges that Shakesby and Matthews (1996) attributed to modification of runout debris by a small (~0.25 km^2) corrie glacier that occupied the upper corrie during the Loch Lomond Stade. Within the inferred glacier limit, clasts exhibit generally greater edge-rounding and some are striated.

Streamlined forms such as those described in the present paper are absent, but given the very small size and probably limited lifespan of the inferred Cwm Cerrig-gleisaid palaeoglacier, the features described by Shakesby & Matthews (1996) probably represent an early stage of runout debris modification, whereas those in Coire an Tuirc represent a much more advanced stage.

Conclusions

1. Downslope from a landslide scar on Sgùrr nan Ceathreamhnan a tongue of hummocky terrain ~1 km long and ~400 m wide extends obliquely across a corrie, descending from 810 m to ~650 m and ascending to 700–710 m up an opposing slope. Individual hummocks are randomly-spaced, circular to elongate, mound-shaped, streamlined and generally less than 6 m high.
2. The streamlined morphology of individual hummocks and their concentration in a tongue that crosses the corrie floor rules out their interpretation as hummocky recessional moraines or ice stagnation moraines. The low, streamlined nature of the hummocks excludes their interpretation as unmodified rock avalanche hummocks.
3. The hummock belt is here interpreted as a tongue of hummocky rock avalanche runout debris, initially deposited during or after downwastage of the last ice sheet and subsequently moulded into streamlined subglacial bedforms by the glacier that reoccupied the corrie during the Loch Lomond Stade of ~12.9–11.7 ka.
4. This interpretation implies that the rock avalanche experienced excess runout of ~800–900 m, and that the glacier that subsequently reoccupied the corrie was warm-based, permitting subglacial erosion of the rock avalanche tongue.
5. Wider implications of this interpretation are: (i) that Loch Lomond Readvance glaciers did not invariably evacuate debris from Lateglacial landslides, as previously supposed; in some cases, landslide debris survived (but was modified by) glacial erosion and entrainment; (ii) some areas previously mapped as hummocky (recessional or ice-stagnation) moraines may represent glacially-moulded landslide runout debris.

The findings of this study contribute to growing awareness of the importance of landslide-glacier interactions in the evolution of glaciated mountain landscapes. In Scotland, landslides and rockfall during interglacial and interstadial periods have contributed to trough widening, corrie extension and the formation of arêtes (Jarman 2009; Ballantyne 2013), and it has been shown that ancient landslide scars are persistent landforms that have survived the last ice-sheet glaciation (Cave & Ballantyne 2016). This study suggests that even the runout debris of large landslides locally survived over-running by glacier ice, albeit in modified form.

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Captions to Figures

Figure 1. Sgùrr nan Ceathreamhnan and Coire Allt an Tuirc, showing the location of landslide scars and the tongue of hummocky terrain south of the main landslide scar.

Figure 2. (a) The East Top (1151 m) of Sgùrr nan Ceathreamhnan from near the West Top, showing headscarp of the former landslide. (b) Steeply-dipping schists of the landslide failure zone. (c) The belt of hummocky terrain that crosses Coire Allt an Tuirc. (d) Typical hummocks and intervening depressions near the terminus of the hummock belt, showing the streamlining typical of glacial bedforms.

Figure 3. Oblique Google Earth™ aerial image of Coire Allt an Tuirc, showing the distribution of hummocky terrain below the twin summits of Sgùrr nan Ceathreamhnan.

Figure 4. Hummocky terrain below an apparent landslide scar in Coire na Cràlaig (NH 097161) west of Stob Coire na Cràlaig (1008 m) in Kintail.

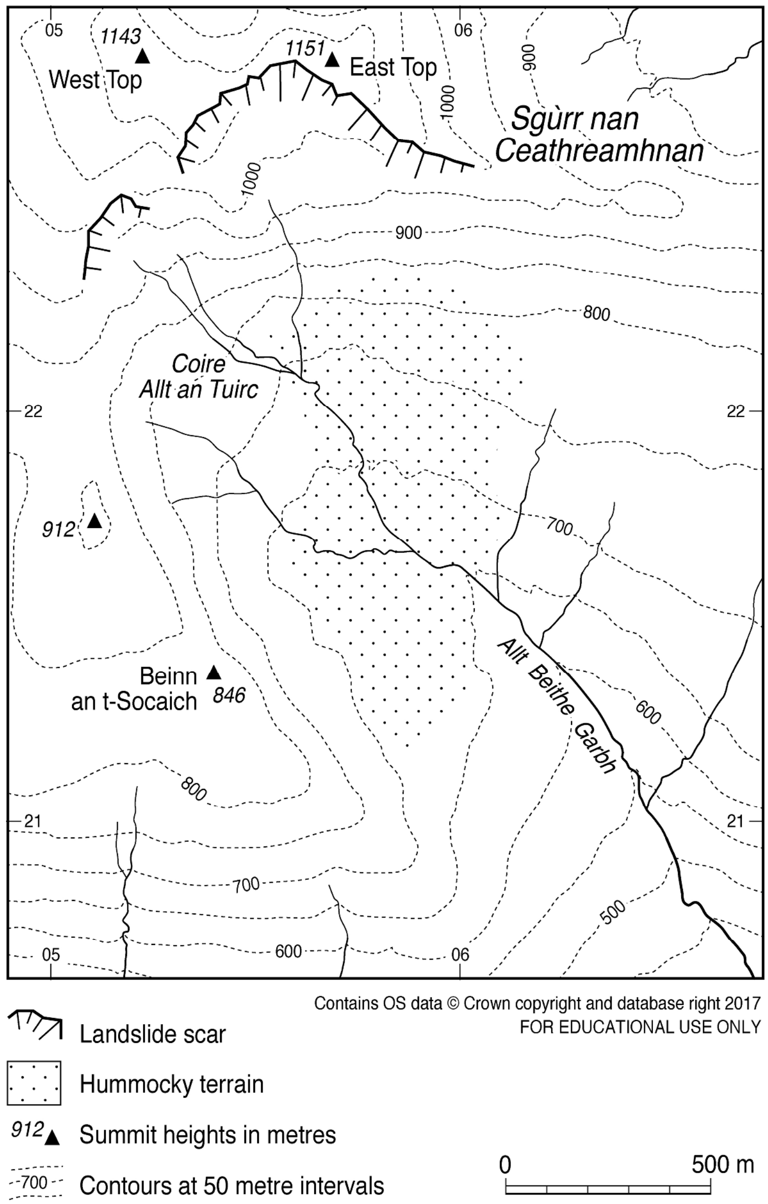

Figure 1. Sgùrr nan Ceathreamhnan and Coire Allt an Tuirc, showing the location of landslide scars and the tongue of hummocky terrain south of the main landslide scar.

117x185mm (600 x 600 DPI)

Figure 2. (a) The East Top (1151 m) of Sgùrr nan Ceathreamhnan from near the West Top, showing headscarp of the former landslide. (b) Steeply-dipping schists of the landslide failure zone. (c) The belt of hummocky terrain that crosses Coire Allt an Tuirc. (d) Typical hummocks and intervening depressions near the terminus of the hummock belt, showing the streamlining typical of glacial bedforms.

128x97mm (300 x 300 DPI)

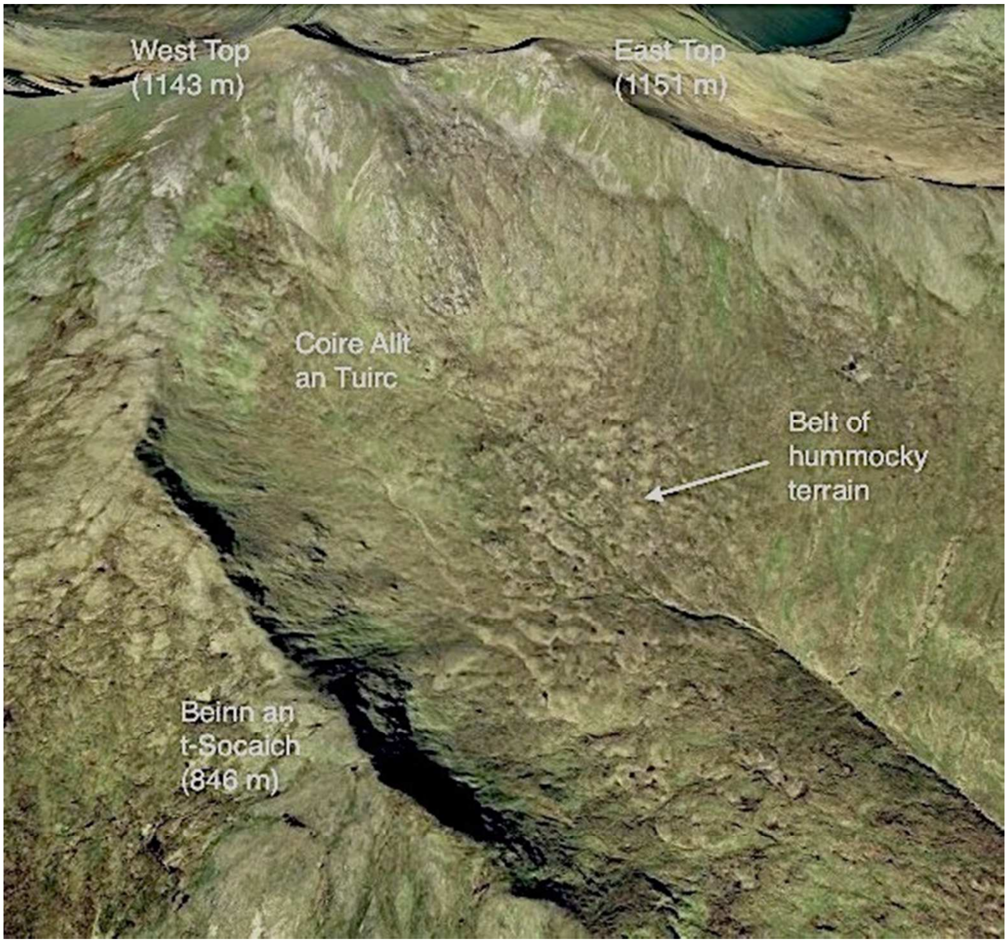

Figure 3. Oblique Google EarthTM aerial image of Coire Allt an Tuirc, showing the distribution of hummocky terrain below the twin summits of Sgùrr nan Ceathreamhnan.

206x193mm (72 x 72 DPI)

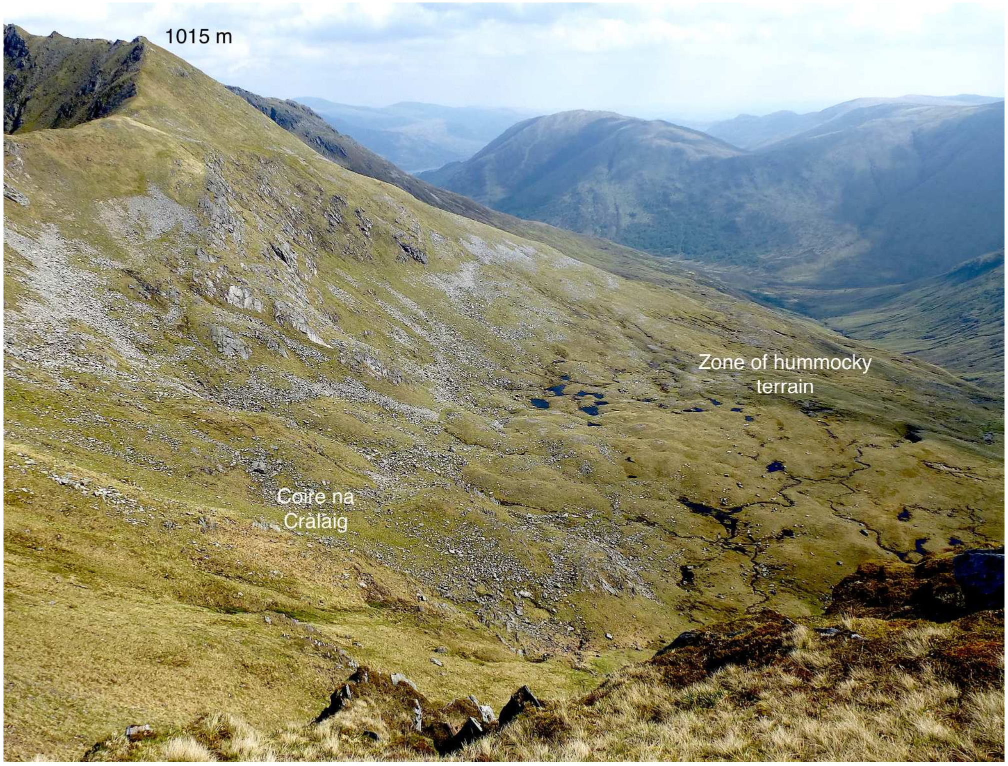

Figure 4. Hummocky terrain below an apparent landslide scar in Coire na Cràlaig (NH 097161) west of Stob Coire na Cràlaig (1008 m) in Kintail.

477x361mm (180 x 180 DPI)