Upper Strathnairn and Drummossie Muir

Jon Merritt

Drummossie Muir

A large-scale, glacially-streamlined ‘whaleback’ ridge forms the western flank of Strathnairn underlain by north-westward-dipping strata of the Lower Old Red Sandstone (Fig. 2). The feature is crossed by the A9 trunk road between Daviot and Inverness (Fig. 94), along which site investigation logs indicate that till is at least 10 m thick (BGS, 1997). The generally smooth, gently convex feature is covered by scrubby vegetation and forestry on Drummossie Muir, passing north-eastwards past the heather-clad Culloden Battlefield site towards Croy, where it is deeply dissected by glacial drainage channels, some of which link with the **Flemington Eskers** to the north-east (Fig. 14) (Merritt et al., 2017).

Low ridges mostly orientated parallel to the axis of this ridge are ubiquitous on Drummossie Muir, south-west of the A9 road (Fig. 94). They are especially well developed in the vicinity of Leys Castle [NH 680 410] and to the north-east of Carr Bàn [NH 670 365], where the land surface has a corrugated form with heather-clad ridges and peat-filled furrows of 2 to 4 m amplitude, spaced 10 to 20 m apart (BGS, 1997). Scrapes in the ridges reveal unstratified, clast-supported rubble formed of local sandstone and siltstone with a matrix of silty, fine-grained sand. Many of the ridges are probably rock cored. This sediment-landform assemblage was interpreted as ‘fluted moraine’ by Fletcher et al. (1996), possibly including megagrooves (Merritt et al., 2013). However, some of the ridges curve and locally bifurcate, lying parallel with flights of ‘in-out’ glacial drainage channels cut into the north-facing slope of the ridge overlooking Inverness (Fig. 14). These channels, and at least some of the low ridges too, clearly formed at an ice margin as it retreated downslope towards the valley of the River Ness and the Great Glen.

Another suite of ridges lie perpendicularly to the large-scale ‘whaleback’ ridge. They are typically 2 to 5 m high and spaced 75 to 150 m apart (Fig. 14). The most prominent ridges lie to the south and south-east of Dalcross Castle [NH 7786 4828], where they have provided the best free-draining sites on which to erect houses and farm buildings. They run perpendicular to the final direction of ice flow, suggesting that they may have formed at a retreating ice-front as winter push-ridges (cf. Boulton, 1986). However, although they commonly coalesce and are generally lobate in plan, with intervening re-entrants, they are not typically asymmetrical in profile. They more probably formed as a result of till squeezing up into, and water flowing within, transverse crevasses in the downwasting ice sheet, possibly following a local surge (Sharp, 1984, 1985; Beaudry and Prichonnet, 1991; Boulton et al., 1996). There are few permanent exposures, but thinly interstratified clayey diamict and clayey pebbly sand has been observed in a 5-m high ridge south-west of Croy [NH 7919 4922] (Fletcher et al., 1996). The diamict included laminae of fine-grained sand that probably represent the water-winnowed tops of cohesive debris flows.

Littlemill Eskers and Mid-Lairgs Pit

The ‘Littlemill Eskers’ form part of a formerly splendid system of parallel eskers that stretched between Inverarnie [NH 689 336] and Lairgandour [NH 721 376] on the south-eastern side of Strathnairn (Gordon, 1993; Fletcher et al., 1996) (Fig. 95). Although the eskers have been extensively quarried at Mid-Lairgs [NH 710 365], the south-western part of the system is protected as a Site of Special Scientific Interest. A single esker leads north-eastwards into a system of eskers, kamiform mounds and kettleholes, which then converge into a broad, flat-topped mound at Lairgandour, now bisected by the re-aligned A9 road. There are four major steep-sided, sharp-crested, subparallel ridges, some 2 km long and generally about 15 m high. The ridges formerly reached about 40 m in height before they were dug away for aggregate. Sections in the eskers at Mid-Lairgs revealed sand and gravel with planar bedding inclined parallel to the sides of the esker (Fig. 96) draped on 'cores' composed of very poorly stratified cobble-gravel with boulders up to 0.5 m in diameter (Fig. 97). The bulk of the features were formed of better-sorted, graded units of sand and gravel displaying large-scale cross-stratification dipping tangentially north-eastwards (Fig. 98). Normal faults parallel to the axes of the ridges were common. The gravel comprised mainly sub-rounded to well-rounded clasts of micaceous psammite and quartzite, with some granite, diorite, fine-grained sandstone, porphyry, amphibolite and semipelitic gneiss. There were sparse clasts of ORS conglomerate and garnetiferous semipelitic schist.

Peat-filled kettleholes and terraced deposits of poorly sorted, silty sands and gravels occurred between the eskers and an undulating, kettled spread of glaciofluvial deposits lying to the south. The latter deposits were exposed in the eastern part of Mid-Lairgs Pit [NH 7140 3673], where a disturbed layer of clast-supported gravel up to 2.5 m thick overlies a thicker unit of cross-laminated, fine to medium-grained sand, micaceous silt and sandy diamict (Fig. 99). Fold noses within the diamicts suggest that they formed as cohesive debris flows. Beds of silt with dropstones intercalated between the diamicts indicate that deposition probably took place within a shallow proglacial or ice-walled supraglacial lake while the ice-front retreated south-westwards, possibly leaving the freshly formed eskers as islands.

The glaciofluvial deposits are mostly sandy to the north-east of Lairgandour, where they pass laterally into glaciolacustrine deposits mapped in the valley of the Craggie Burn (BGS, 1997) (Fig. 94). These micaceous fine-grained sands and silts both overlie, and interdigitate with, morainic deposits and glaciofluvial sand and gravel. In a river cliff section [NH 7368 3911], a 7 m-thick sequence of thinly interlaminated clayey silt, silty clay and very fine-grained sand incorporates several splendid dropstones up to one metre in diameter. Upstream, [NH 7406 3891], 3 to 4 m of thinly bedded, horizontally laminated sandy silts and silty clays overlie about 6 m of micaceous fine-grained sand with stringers of gravel, lenses of coarser-grained sand and thin seams of silt. Climbing ripple-drift, cross- lamination indicates a palaeocurrent flow towards the south-east. The sands are affected by normal faults, presumably the result of consolidational collapse, but the overlying silts are not. It would seem that during deglaciation ice continued to block Strathnairn downstream of the gorge at Daviot, while upstream ice retreated leaving a proglacial lake in the valley of the Craggie Burn.

Milton of Farr boulder train

The Littlemill Esker system passes south-westwards into a moundy, kettled terrace formed of very poorly sorted cobble gravel. The terrace is strewn with large blocks of gneiss up to several metres in diameter, forming a remarkable boulder train crossing the valley (Fletcher et al., 1996) (Fig. 94). Blocks become more numerous south-westwards towards their probable source on the craggy slopes of Creag Bhuidhe (NH 665 315).

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Figures

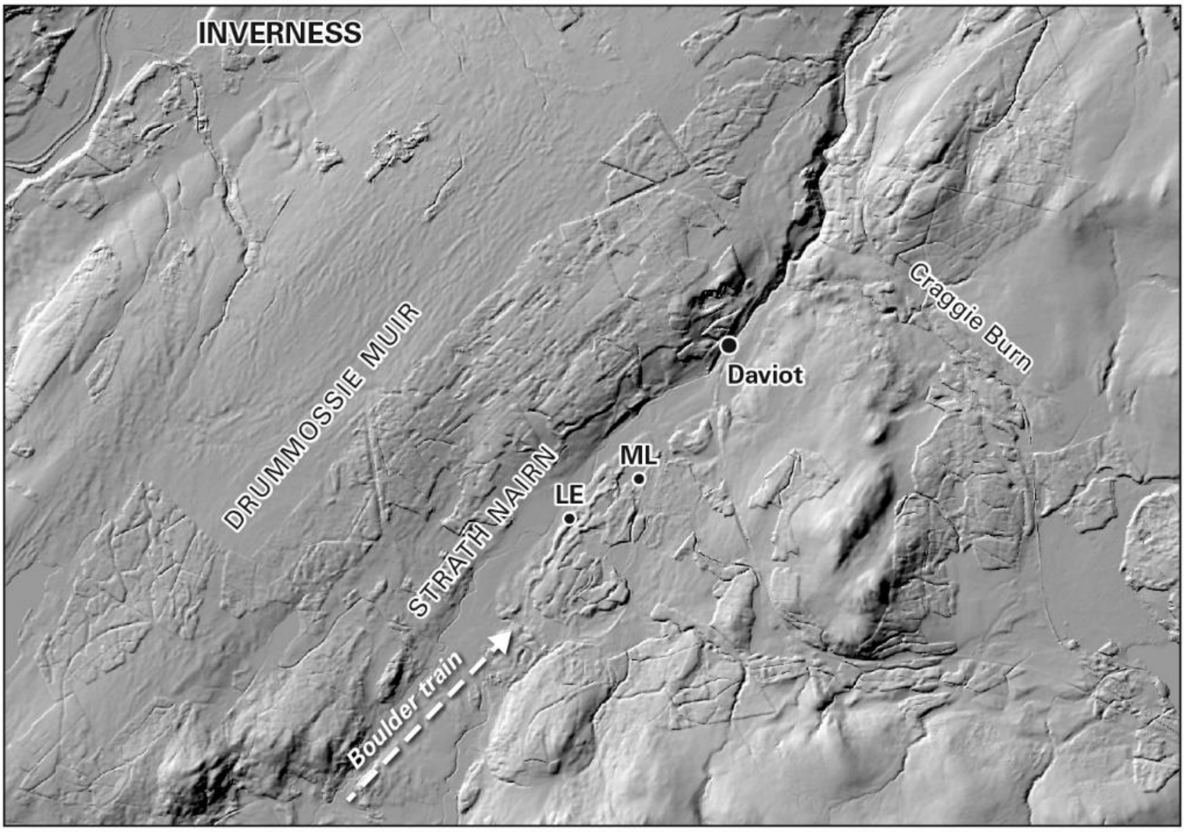

Figure 94. Hill-shaded surface model of the area around Drummossie Muir and the Upper Nairn Valley. LE, Littlemill Eskers; ML, Mid-Lairgs sand and gravel quarry. Surface model built from Intermap Technologies NEXTMap Britain elevation data.

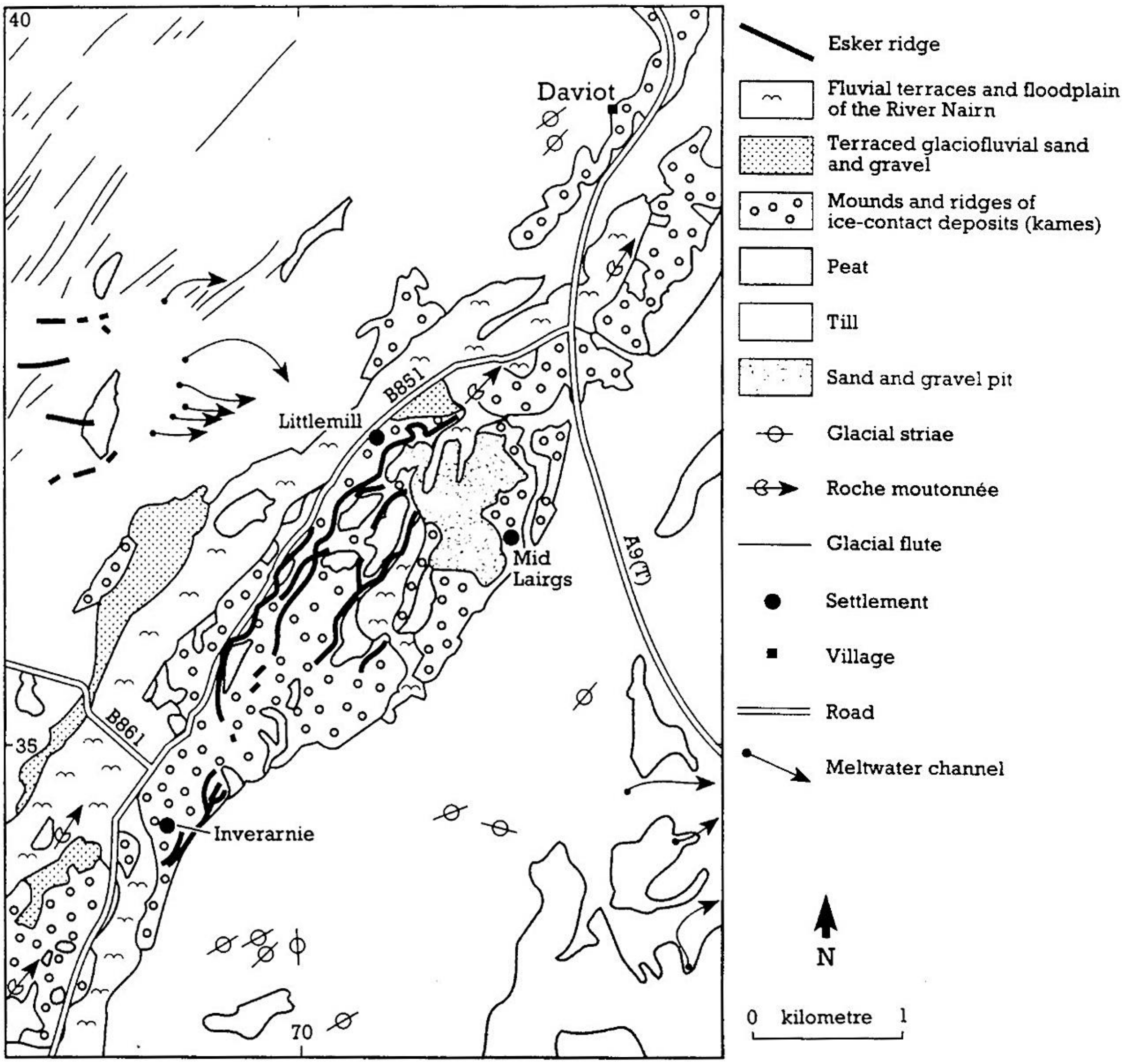

Figure 95. Geomorphology of the Littlemill Esker System between Inverarnie and Daviot (from Gordon, 1993).

Figure 96. Section across one of the Littlemill eskers in c. 1990, looking south-west.

Figure 97. Poorly-sorted cobble gravel within the core of one of the Littlemill eskers in c. 1990, looking south-west.

Figure 98. Longitudinal section through one of the Littlemill eskers in c. 1990, looking north-west.

Figure 99. Section through undulating, kettled deposits of sand and gravel formerly lying between the Littlemill eskers and Mid-Lairgs farm in c. 1990, looking east.