

PORT LOGAN

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OS Grid Reference: NX092402

Highlights

The coastal section at Port Logan displays a sequence of glacial deposits resting on a shore platform. These provide sedimentary evidence for the pattern of Late Devensian ice-sheet flow in south-west Scotland and show successive ice movements from sources in the Highlands and Southern Uplands.

Introduction

Port Logan (NX 092402) is a coastal section 20 km south of Stranraer in the Rhinns of Galloway. This area was among the first to be surveyed by the Geological Survey of Scotland (Irvine, 1872) and it was noted that the glacial deposits, contained a considerable variety of erratics. Particular attention was given to the occurrence of marine shells associated with the glacial deposits, which had previously been reported in that area by Moore (1850). It was noted that shells occurred in both laminated clays as well as in the underlying till (Irvine, 1872), and the cliffs immediately to the south of Port Logan were reported as a good example of the latter type of deposit.

Description

The Mull of Galloway was last glaciated by ice moving from the north-east, as is indicated by the long axes of the many drumlins on the peninsula (Kerr, 1982). Thick drift sections are present along the coast where these drumlins have been truncated by marine erosion. A lower, calcareous, shelly till associated with an earlier phase of glaciation from the north is also recorded (Kerr, 1982). In the cliffs south of Port Logan, a brown clayey till, with only occasional clasts near the base, but becoming more stoney higher up the section, rests directly on bedrock. Fragments of shells occur within the till (Brady *et al.*, 1874; Sutherland, unpublished data) or within a sandy lens in the till (Irvine, 1872). Approximately 2–3 m of the deposit are presently exposed, with the greater part of the 20 m of drift being vegetated. Near the top of the deposits approximately 1 m of sand and gravel with interbedded massive red clays overlies the till (D.G. Sutherland, unpublished data).

Only a limited fauna has been reported from Port Logan. Brady *et al.* (1874) recorded the molluscs *Astarte sulcata* (da Costa), *Nuculana pernula* (Müller) and *Yoldiella lenticulata* (Müller) and the ostracod *Cytheridea punctillata* Brady; Irvine (1872) recorded *Astarte sulcata* (da Costa), *Macoma baltica* (L.), *Nuculanacf. pernula* (Müller) and *Hiatella arctica* (L.).

The bedrock surface on which the shelly till rests is part of a shore platform which can be traced around the coast of the Mull of Galloway at approximately 10 m above present sea level. It clearly pre-dates the last glaciation of the area and may be equivalent to the rock platforms described by Stephens (1957) on the opposite side of the North Channel and by Gray (1978a) on the Mull of Kintyre (see Glenacardoch Point).

Interpretation

The shelly till of the Rhinns of Galloway may relate to an early phase of the last (Late Devensian) ice-sheet glaciation when Highland ice extended across this area from the north, transporting, *inter alia*, erratics of Ailsa Craig microgranite and Arran granite on to the peninsula (Charlesworth, 1926a; Kerr, 1982; Sutherland, 1984a). Subsequently, Southern Uplands ice expanded, and a north-east to south-west ice flow developed across the area, moulding the drumlin landscape and carrying erratics of Loch Doon granite. This sequence of events is thus similar to that in the southern Central Lowlands (see Nith Bridge and Hewan Bank) where expansion of the Southern Uplands ice displaced Highland ice as the last glaciation progressed. Port Logan is thus important in a regional context, providing evidence of

the relative pressures exerted by the two principal ice masses in Scotland during the last glaciation. This field evidence will help provide the necessary constraints for models of ice-sheet dynamics and palaeoclimatic reconstruction.

Additional interest in the site is provided by the glaciated rock platform as there is currently considerable debate as to the age and origin of rock platforms along the west coast of Scotland (Sissons, 1981a, 1982b; Dawson, 1984; Sutherland, 1984a).

Conclusions

Port Logan is a representative site for the glacial sequence in south-west Scotland and forms part of the site network showing the major regional variations in the flow patterns of the last ice sheet (around 18,000 years ago). In particular, the deposits reveal successive movements of ice across the area from the Highland and Southern Uplands during the Late Devensian ice age. .

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